CHEMISTRY AND BIOCHEMISTRY

1st year - DENTISTRY - *summer semester 2023/2024*

Practical exercises

Week	Dates	Topic	
1	19.2.	*Seminar: Introduction to clinical biochemistry*	
2	26.2.	*Lab 1*	Examination of blood I
3	4.3.	*Lab 2*	Examination of blood II
4	11.3.	*Lab 3*	Examination of blood III
5	18.3.	*Lab 4*	Examination of urine I
6	25.3.	*Lab 5*	Examination of urine II
7	1.4.	*Public holiday (Easter Monday)*	
8	8.4.	*Lab 6*	Clinical enzymology
9	15.4.	*Lab 7*	Molecular biology I
10	22.4.	*Lab 8*	Molecular biology II
11	29.4.	*Lab 9*	Molecular biology III
12	6.5.	*Seminar:Acid base balance*	
13	**13.5.**	**Credit test**	
	13.5. – 17.5.	*Substitutions*	
14	20.5.	Consultations	

Conditions for the awarding of course credit:

1. Full attendance at the laboratories.
   Absences from laboratory exercises 1–6 can be substituted during May (preferably during the week of substitutions) after reservation in the Moodle course. The reservation system will be available from 29.4.2024.
   Absences from laboratory exercises 7–9 (molecular biology) can be compensated by preparing a seminar paper.
2. Completed lab reports from laboratory exercises (completed worksheets).
3. Completion of evaluated activities of the summer semester in the Moodle course Chemistry and Biochemistry.
4. Credit test successfully passed. The number of attempts is limited to three. If the student does not use these three options within the announced dates, there is no right to ask for an extra date.

Credit test:

Test contents: topics of practical exercises (clinical biochemistry, molecular biology)

Regular date:	**Monday**	**13.5.2024**	**9:00 – 9:30**
Other dates:	Monday	27.5.2024	10:00 – 11:00
	Monday	3.6.2024	10:00 – 11:00
	Monday	24.6.2024	10:00 – 11:00
	Monday	9.9.2024	10:00 – 11:00

Regular date: remotely (from anywhere) on the Socrative platform (details will be announced on 29.4.2024)
All other dates: a classic in person test "on paper"

Web pages of the Department of Medical Chemistry and Biochemistry: www.lfp.cuni.cz/biochemie
E-learning support on the Moodle platform: https://lms.lfp.cuni.cz/course/view.php?id=382

LIST OF EXERCISES

Lab 1: **Examination of blood I (proteins)**

a) Estimation of total protein by biuret reaction
b) Estimation of albumin
c) Estimation of C-reactive protein (CRP) in blood serum

Lab 2: **Examination of blood II (glucose, lipids)**

a) Estimation of glucose in blood serum
b) Estimation of glucose in capillary blood using glucometer
c) Estimation of total cholesterol
d) Estimation of triglycerides

Lab 3: **Examination of blood III (nitrogen compounds)**

a) Estimation of urea
b) Estimation of uric acid
c) Estimation of the total and conjugated bilirubin

Lab 4: **Examination of urine I**

a) Physical examination of urine
b) Basic chemical examination of urine
c) Microscopic examination of urinary sediment

Lab 5: **Examination of urine II**

a) Estimation of glomerular filtration rate as a creatinine clearance
b) Amino acids and their metabolites in urine

Lab 6: **Clinical enzymology**

a) Alanine aminotransferase and aspartate aminotransferase in liver
b) Estimation of alkaline phosphatase in blood serum
c) Estimation of lactate dehydrogenase activity in blood serum

Lab 7: **Molecular biology I**

a) DNA isolation
b) Measurement of DNA concentration, purity control

Lab 8: **Molecular biology II**

a) Polymerase chain reaction

Lab 9: **Molecular biology III**

a) Restriction cleavage analysis
b) Electrophoresis, interpretation of the results