

MEDICAL CHEMISTRY AND BIOCHEMISTRY II

2nd year - GENERAL MEDICINE - winter semester 2023/2024

Practical exercises

Week	Dates	Topic	
1	2.10. – 6.10.	<i>Seminar: Introduction to clinical biochemistry</i>	
2	9.10. – 13.10.	<i>Lab 1</i>	Examination of blood I
3	16.10. – 20.10.	<i>Lab 2</i>	Examination of blood II
4	23.10. – 27.10.	<i>Lab 3</i>	Examination of blood III
5	30.10. – 3.11.	<i>Seminar: Renal functions, urine</i>	
6	6.11. – 10.11.	<i>Lab 4</i>	Examination of urine I
7	13.11. – 17.11.	<i>Lab 5</i>	Examination of urine II
8	20.11. – 24.11.	<i>Lab 6</i>	Clinical enzymology
9	27.11. – 1.12.	<i>Lab 7</i>	Molecular biology I
10	4.12. – 8.12.	<i>Lab 8</i>	Molecular biology II
11	11.12. – 15.12.	<i>Lab 9</i>	Molecular biology III
12	20.12.	Credit test	
13	3.1.	Credit test – resit date	
14	8.1. – 12.1.	CREDIT	

Study groups 1, 3, 6

– Students' laboratory 3 (UCH3.20 – 3rd floor, building 1)

Study groups 2, 4, 5

– Students' laboratory 2 (UCH3.22 – 3rd floor, building 1)

Conditions for the awarding of course credit:

1. Full attendance at the laboratories.

Absences from laboratory exercises 1–6 can be substituted during January after reservation in the Moodle course.

The reservation system will be available from 18.12.2023.

Absences from laboratory exercises 7–9 (molecular biology) can be compensated by preparing a seminar paper.

2. Completed lab reports from all laboratory exercises (completed worksheets).

3. Completion of all evaluated activities in the Moodle course [Medical Chemistry and Biochemistry II](#).

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: **Wednesday 20.12.2023 9:00 – 9:30**

Resit date: Wednesday 3.1.2024 9:00 – 10:00

Other dates: Monday 15.1.2024 10:00 – 11:00

Monday 22.1.2024 10:00 – 11:00

Monday 29.1.2024 10:00 – 11:00

Regular date: remotely (from anywhere) on the Socrative platform (details will be announced on 27.11.2023)

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://moodle.lfp.cuni.cz/course/view.php?id=290>

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 (phenylketonuria, cystinuria, tyrosinosis)

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