



## Requirements for Completion and Credit Award in MEDICAL BIOCHEMISTRY 2 2nd Year of General Medicine Academic Year 2025/2026 (Summer Semester)

In accordance with the Higher Education Act and the Study Regulations of the Jessenius Faculty of Medicine, Comenius University in Martin (JFM CU) No. 21/2023 and 2/2025, the Department of Medical Biochemistry has adopted the following rules for the award of **10 credits** for the course Medical Biochemistry 2 during the winter semester of the 2<sup>nd</sup> year of study at JFM CU in Martin.

### 1. Mandatory Attendance at Seminars and Laboratory Exercises

- A student is required to attend all scheduled seminars and laboratory exercises as per the official timetable. Substituting attendance by joining a different study group during the same week **is not permitted**.
- A student may miss a maximum of two seminars and laboratory exercises per semester, **provided the absences are justified by a medical certificate or other serious reasons**. All missed seminars and laboratory exercises must be made up during the 13<sup>th</sup> or 14<sup>th</sup> week of the semester. **Only one seminar and laboratory exercise may be made up per day during these two weeks**.
- If a student misses **more than two seminars and laboratory exercises**, they must submit a **written request to the Head of the Department of Medical Biochemistry at JFM CU in Martin**. The student may attend the missed sessions only after receiving official approval of the request.

### 2. Achievement of Minimal 60% from All 5-Question Tests

- At the beginning of most seminars, a 5-question test (maximum 5 points) will be administered, covering the topic relevant to the corresponding seminar and laboratory exercise.
- If a student achieves **less than 60% of the total possible score** from all 5-question tests throughout the semester, they will be required to take a **remedial 20-question test** (covering





the full range of seminar topics from the winter semester) during the 13<sup>th</sup> or 14<sup>th</sup> week of the semester. The student may take the 20-question test twice. If the student fails to achieve at least 60% on the second attempt, they must submit a written request to the Head of the Department of Medical Biochemistry at JFM CU in Martin. For a scheduled date a commission-based oral examination.

- **Any absence from the retake date means losing the attempt!**

### 3. Achievement of More than 60% on the Credit Test

- Students will write two credit tests. The 1<sup>st</sup> credit test will take place in the 7<sup>th</sup> week of the semester. The 2<sup>nd</sup> credit test will take place in the 12<sup>th</sup> week of the semester.
- The credit test will consist of multiple-choice questions with four options provided. Each question will have one or two correct answers. The evaluation of questions will follow this scheme:

| QUESTION WITH 1 CORRECT ANSWER          |                |
|-----------------------------------------|----------------|
| Answer Selection                        | Points Awarded |
| 1 correct answer marked                 | 2              |
| 1 correct and 1 incorrect answer marked | 0              |
| Incorrect answer marked                 | 0              |

  

| QUESTION WITH 1 CORRECT ANSWERS             |                |
|---------------------------------------------|----------------|
| Answer Selection                            | Points Awarded |
| Both correct answers marked                 | 2              |
| Only one correct answer marked              | 1              |
| One correct and one incorrect answer marked | 0              |
| Incorrect answer marked                     | 0              |

- If a student archives less than 60%, the first retake of the 1<sup>st</sup> credit test will be scheduled in the 8<sup>th</sup> week, and the second retake of the 1<sup>st</sup> credit test will be in the 13<sup>th</sup> week of the semester. The first retake of the 2<sup>nd</sup> credit test will be scheduled in the 13<sup>th</sup> week, and the second retake of the 2<sup>nd</sup> credit test will be in the 14<sup>th</sup> week of the semester. If the student fails to achieve at least 60% on the second attempt, they must submit a written request to





the Head of the Department of Medical Biochemistry at JFM CU in Martin. For a scheduled date a commission-based oral examination.

- **Any unexcused absence from the credit test will result in the loss of the attempt and a score of 0 points!**

#### 4. Possibility to Earn Bonus Points for Lecture Attendance

- At the end of each lecture, the student confirms their attendance **by scanning their student ID card** at a reader located at the back of the lecture hall.
- A student who fails to bring their student ID card and therefore cannot confirm attendance may still attend the lecture; however, the lecture will not be counted toward their total attended lectures.
- Students can earn bonus points for registered attendance at lectures: **0.25 points** for each attended lecture. At the end of the semester, the student will be able to add the bonus points **once** to one of the following, at their own discretion: the points from the 5-question tests (points from all lectures), the points from the 1<sup>st</sup> credit test (points from lectures 1–11), the points from the 2<sup>nd</sup> credit test (points from lectures 12–22), or the overall final assessment.
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#### 5. Awarding of Credits at the End of the Semester

- The academic performance is graded using a six-grade classification scale in accordance with the Study Regulations of JFM CU in Martin, No. 21/2023, Article 11, Section 6. The final grade is calculated by summing points obtained from the 5-question tests and the credit test. The maximum combined score (5-question tests + credit test) represents 100%.

| Grading Scale | Numeric Value | Percentage Range |
|---------------|---------------|------------------|
| A             | 1             | 100 – 91%        |
| B             | 1.5           | 90 – 81%         |
| C             | 2             | 80 – 73%         |
| D             | 2.5           | 72 – 66%         |
| E             | 3             | 65 – 60%         |
| Fx            | 4             | Less than 60%    |





- A student who receives a grade of A in the Medical Biochemistry 1 course during the winter semester, and a grade A or B in the Medical Biochemistry 2 course during the summer semester:
  - a) will not be required to take the pre-exam test before the final examination in Medical Biochemistry 2,
  - b) will be eligible to register for an early exam date (pre-term).

## MEDICAL BIOCHEMISTRY EXAM

1. The student may take the exam if they have been granted course credit in Medical Biochemistry 1 and have obtained at least a grade E in Medical Biochemistry 2 during the summer semester.
2. The exam consists of **a written part** and **an oral part**. The student signs up for the exam through AiS2.
3. The Medical Biochemistry exam will take place in the teaching premises of **the Department of Medical Biochemistry**, Jessenius Faculty of Medicine in Martin, Comenius University Bratislava. Before the exam begins, the student identifies themselves with their **student ID card (ISIC)**.
4. The exam test contains **25 questions** (20 multiple-choice questions and 5 written questions – formulas; reactions; calculation of concentration, dilution of solutions, pH; reference values of basic biochemical parameters). Multiple-choice questions are worth 1 point for a correct answer, and written questions are worth 2 points for a correct answer.
5. To proceed to the oral part of the exam, it is necessary to obtain **at least 60 %** of the points on the exam test. If a student does not obtain at least 60 % of the points on the exam test even on the second resit date, they are allowed to continue to the oral exam.
6. If a student obtains more than 60 % of the points on the exam test but is not successful in the oral exam, they do not have to retake the written test on the first or second retake date.
7. During the oral part of the exam, student answers **3 questions**, one from each thematic area: 1 – Metabolism, 2 – Principles of regulation of living systems, 3 – Functional biochemistry.





8. The final grade of the Medical Biochemistry 2 takes into account the result of the oral answer, the exam test as well as the result of overall evaluation of the winter and summer semesters. The final grade will be entered into AIS2 electronically.
9. The terms in **August 2026** are intended primarily as **retake terms**.

## COURSE REQUIREMENTS FOR STUDENTS

1. The student is required to be theoretically prepared for the seminar based on the relevant lectures and chapters from the textbook: Emine E. Abali, Susan D. Cline, David S. Franklin, Susan M. Viselli Ph.D.: Lippincott Illustrated Reviews: Biochemistry, Eight Edition, Wolters Kluwer, 2022.
2. The student is also required to prepare for each laboratory exercise using the course textbook: Lehotský J et al. Medical Chemistry and Biochemistry II, Comenius University in Bratislava, 2012, as well as the materials provided via MS Teams in the dedicated team accessible to all second-year students.
3. If a student is not adequately prepared for the seminar and laboratory exercise (i.e., unable to explain the task principle, procedure, calculations, and interpretation of results), they will not be allowed to participate in that seminar and laboratory exercise. Instead, student will need to make it up during the 13<sup>th</sup> or 14<sup>th</sup> week of the semester.
4. Student must arrive **ON TIME** for all lectures, seminars and laboratory exercises! Late arrival without a serious reason will result in the student being denied participation, and they will be required to make up the seminar and laboratory exercise during the 13<sup>th</sup> or 14<sup>th</sup> week.
5. Before entering the seminar rooms and laboratories, student must **change into indoor footwear** and store their belongings in lockers. In the laboratory student is required to wear **a WHITE LAB COAT** and follow the laboratory safety and conduct rules at all times.
6. Without necessary materials (**indoor shoes, lab coat, calculator, notebook/tablet, ruler, and writing tools**), student will not be allowed to attend the seminar and laboratory exercise and must make it up during the 13<sup>th</sup> or 14<sup>th</sup> week.
7. After completing the lab work, student must clean their workspace and submit a lab report. The report will be reviewed by the teacher, and only if it is complete and correct will the





student receive a signature confirming participation. Reports may be submitted on paper or a tablet that allows for teacher signature. Student must keep all reports for potential inspection at the end of the semester.

8. **The use of mobile phone or other non-essential electronic devices during instruction is strictly prohibited.**
9. If student have any questions about the seminars, lab exercises, or need to justify an absence, they is encouraged to contact the course coordinator, Assoc. Prof. Eva Babušíková, PhD., via email at [eva.babusikova@uniba.sk](mailto:eva.babusikova@uniba.sk), MS Teams chat, or in person at the Department of Medical Biochemistry, Jessenius Faculty of Medicine in Martin, Comenius University Bratislava.
10. Student is expected to be able to draw structural formulas of the following molecules and metabolic pathways:

| Category      | Molecules / Metabolic Pathways                                                                                                                                                                                                                                                                                                                                                                |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Saccharides   | Monosaccharides, disaccharide, derivatives – amines, phosphate esters<br>Glucose synthesis and degradation, glycogen synthesis and degradation, pentose phosphate pathway, glucuronic acid, Krebs cycle                                                                                                                                                                                       |
| Lipids        | Simple lipids, complex lipids – phospholipids, plasmalogens, phosphatidylinositol-4,5-bisphosphate (PIP <sub>2</sub> ), ceramide, sphingolipids, cholesterol, fatty acids, arachidonic acid, bile acids, testosterone, estradiol, progesterone, aldosterone<br>Conversion of cholesterol to steroid hormones and bile acids, synthesis (following malonyl-CoA) and degradation of fatty acids |
| Proteins      | Amino acids, decarboxylation and deamination of amino acids, amines, thyroxine (T <sub>4</sub> ), triiodothyronine (T <sub>3</sub> )                                                                                                                                                                                                                                                          |
| Nucleic Acids | Purine and pyrimidine nucleotides, cyclic adenosine monophosphate (cAMP), cyclic guanosine monophosphate (cGMP), nicotinamide adenine dinucleotide (NAD <sup>+</sup> ), nicotinamide adenine dinucleotide phosphate (NADP <sup>+</sup> ), pyridoxal phosphate (PLP), flavin adenine dinucleotide (FAD; including composition description)                                                     |

