ACADEMIC STANDARD
FOR THE DISCIPLINE OF MEDICAL BIOCHEMISTRY

1. Goals of the discipline training course
   The main objective of the course is the study of the function of the human organism on an intra- and intercellular level, along with the integration of the processes in the whole organism in general.
   The objective conforms to:
   • The University’s mission and concept;
   • The content and credit rating of the discipline (in accordance with the ECTS), as listed in the curriculum;
   • The qualification characteristics of the discipline;
   • The academic degree (Master’s)
   The objective is consistent with the ranking of the discipline in the specialty scope in terms of importance and chronology in the curriculum. As a fundamental discipline, it predominantly serves the next stages of the education.

2. Syllabus
   The topics and the time schedule of the lectures, practical seminars and assignments are listed on the information board in the Department.
   The content is arranged chronologically so that each subsequent lecture and the related practical seminars utilize the already discussed topics and concepts. The unnecessary overlap or the presence of “blank spots” between “curriculum-linked” disciplines is being avoided.

3. Prerequisites
   The students should be acquainted with the basics of biology and chemistry from the high school courses, so that they may begin and successfully finish the biochemistry training.
   The second year students from the specialties of Medicine, Dental Medicine and Pharmacy are allowed to sit the biochemistry exam only after passing an entrance test on biochemistry before the exam itself.

4. Academic resources
   The academic staff of the Department of Biochemistry includes 3 (three) habilitated lecturers, 2 (two) non-habilitated lecturers with a postgraduate doctoral degree in the corresponding scientific field, and 6 (six) non-habilitated teachers. Of all the tutors, 6 (six) have acquired specialty on Medical Biochemistry, 2 (two) are enrolled and conduct specialization training in the field.
   The lectures are presented by habilitated staff members (Associate Professor or Professor) holding a scientific degree (PhD or Doctor of Medical Sciences) acquired
in a doctoral program. Up to 30% of the lectures are assigned to non-habilitated staff members holding a scientific degree, acquired in a corresponding doctoral program.

The practical seminars are led by habilitated and non-habilitated staff members (Assistant Professor, Chief Assistant Professor). The non-habilitated staff members hold a Master’s degree in Medicine or Dental Medicine, Pharmacy, Biology and Chemistry, and are recruited after a contest.

5. Material resources
The Department of Biochemistry of MU Plovdiv provides:

- 3 (three) training laboratories and 1 (one) seminar room with suitable equipment for the practical seminars. The total laboratory floorage of the Department of Biochemistry covers about 145 m². All classrooms are set up with computer and multimedia equipment, including 4 TV monitors.
- 3 (three) scientific laboratories equipped with test kits and experimental work installations. The laboratory area for research activity for 1 staff member is approximately 10 m².
- The laboratory coverage of the Department of Biochemistry includes common equipment (UV-VIS, spectrophotometers, thermostats, centrifuges, analytical scales, pH-meters etc.), as well as specific analytical equipment (ELISA system – spectrophotometer and cleaning appliance; electrophoresis system and Western Blot).

6. Lecture course
Lectures for the Bulgarian and English courses of Medicine, Dental Medicine and Pharmacy are prepared and delivered as multimedia presentations, which are available for the students in electronic form in advance, so that they can prepare for each practical seminar. The scope and the format of the lecture course are determined by the lead lecturer.

7. Practical seminars
They are conducted with student groups. Methodical instructions and a notebook with practical exercises and tests are provided. Individual tasks are assigned. Evaluating:

- the student’s preparation;
- the results (the acquired knowledge and skills) from the corresponding seminar.

The students may be asked to prepare and defend their own thesis (presentation) on a subject, assigned by the teacher during the previous seminar. Consequently, the presenting students should defend their thesis in front of their peers in an open discussion.

8. Information resources. Recommended reading materials. Websites
The teacher is required to prepare lectures and seminars, related to the discipline, and to provide their lectures and additional study materials in electronic form.

The Department provides a list of recommended literature related to the discipline and to each of its components (lectures, practical seminars) with a priority of the available sources (they must be listed as “basic resources”). Internet resources, containing useful study materials for the students, may be recommended as well.

9. Textbooks and lecture courses
   A. Basic
   • Манева А., Лекционен курс по медицинска биохимия, 2016-2017 г.
   • Биволарска А., Лекционен курс по медицинска биохимия, 2016-2017 г.
   • Каменов В., Лекционен курс по медицинска биохимия, 2016-2017 г.
   • Влайкова Т., Лекционен курс по медицинска биохимия с преподаване на английски език – за медицина и дентална медицина, 2016-2017 г.
   • Г. Косекова, В. Митев, А Алексеев, Лекции по медицинска биохимия, Централна медицинска библиотека, София, 2016.

   B. Additional
   • А. Ангелов, Е. Гачев, К. Дачева, А. Кръшка, Т. Николов, Л. Сираков, Биохимия за медици и стоматология, Университетско издателство “Св. Климент Охридски”, София, 1995.

10. Progress tests
    The students should be tasked dynamically and intensively during the semester with the premise that the way of acquiring knowledge and skills is a crucial factor for the depth, solidity and applicability of the learned material. The educational progress of students is verified through tests, minimum twice during a semester. The students are provided with information and explanations of the test results immediately after or during the next seminar, with the aim of improving their subsequent training. The students have the right to see their tests up until 3 days after the announcement of the results. The progress test results are included as a component in the final grade for the semester.

11. Self-preparation and extra-curricular student activities
The self-preparation is supervised by the teacher (Assistant Professor), who guides the students in terms of reading materials and studying methods.

12. Teacher-student cooperation

The cooperation includes:

- Teacher’s commitment to the students, their preliminary preparation, current difficulties in mastering the subject and individual capabilities;
- Providing consultation hours;
- Assigning students to teams with scientific tasks, research, projects etc.

13. Exams

The current grades, included in the syllabus of the discipline, are formed by:

- Grades from the seminars, cooperation with the teacher in scientific research and projects etc.
- Three written assignments (colloquiums) during each semester.

14. Assessment standards

The successful study of the discipline Biochemistry in accordance with the syllabus is assessed as a sum of grades, divided into two basic components:

- **The first** includes the overall evaluation of the student’s academic activity for the whole semester (no more than 30%). It incorporates separate grades from continuous assessment and colloquiums for the complete and adequate implementation of the individual assignments from the syllabus of the discipline.
- **The second** includes the grade from the discipline exam (no more than 70%). The rules of the exam conduction are important in terms of minimizing the possibility of result manipulation.

Unambiguous standards for evaluation are developed for the discipline. The levels of students’ presentation and use of knowledge are defined as information-reproductive, technologically-productive, problem-productive, innovative-creative. Based on the above, a grade for each stage of the theoretical component of the exam is determined as follows:

- **Poor (2)** – for students with scarce knowledge, which cannot serve as a basis for the subsequent levels of education – pre-clinical and clinical disciplines;
- **Average (3)** – for students who present the material as a “tagged scheme” with a lack of key points in the subject; lack of readiness for self-usage of the acquired knowledge and professional competence; lack of understanding of the terminology; lack of linguistic coherence in the exposition;
- **Good (4)** – for students who present the topic descriptively, productively, by using examples; limited autonomy in using the acquired knowledge and professional competence; in the exposition – despite the presence of good linguistic basis, there are discrepancies in the terminology;
- **Very good (5)** – for students who develop the topic on their own, in a productive and non-standard manner, seeking new algorithm and analysis of the literary data.
used; attempt to draw out and defend their own thesis; adequate use of terminology from the scientific field of the studied discipline; good linguistic level;

- **Excellent (6)** – for students who build their thesis autonomously, logically and creatively; well-founded and original application and interpretation of the literature, related to the topic; competence and readiness to use the acquired knowledge and professional skills; accuracy and rich vocabulary of the exposition.

At the beginning of the course the students should get acquainted with the evaluation standards, the continuous assessment procedures and the feedback options for their progress during the semester.

15. **Final grade formation**

The final grade determines the extent to which the student has achieved the education goals set at the beginning of the course. It is multicomponent and includes a grade from a written final exam, a grade from the exam interview and a grade from the continuous assessment.

A coefficient of significance (from 0 to 1) is assigned to the each component of the final assessment with the total sum of the coefficients always being 1. The final grade within the six-point evaluation system is a sum of the grades of the different components, multiplied by the corresponding coefficients of significance:

- \( Q(\text{final grade}) = k_1 Q(\text{continuous assessment grade}) + k_2 Q(\text{written exam grade}) + k_3 Q(\text{interview grade}) \)
- \( k_1 = 0.20; k_2 = 0.50; k_3 = 0.30 \)

16. **Documenting, storing the results and control of the evaluation process**

- The students have the right and the obligation to be informed about the rules, the procedures and the results of the evaluation, to make claims and complaints in case of a violation of those rules.
- Within the meaning of the preceding paragraph, the student has a claim in case of technical omissions and errors (i.e. during the calculation or registering of the grades), as well as on the basis of a serious discrepancies in the demonstrated knowledge, skills and competence, and the final assessment.
- Under the preceding paragraph, the grades may be corrected in the Student book, the exam protocol or the General ledger only by the titular of the discipline.
- Any student arguments and claims should be presented in a written form to the exam committee, which should provide an argumentative response by the end of the next workday.
- Established and proven serious violations of the rights of the students during the assessment of their knowledge, skill and competence are submitted as a written complaint addressed to the Deputy Rector of QA.

Exam materials are stored and students are given the opportunity to check them and the basis of their evaluation according to a procedure, announced in advance. The period during which the students have access to exam materials and evaluation results is no longer than 3 (three) workdays after the date of the exam.
The characteristics of the discipline are presented to the students in the beginning of the course. This is done in accordance with HEA art. 56, par. 1: “The tutors are required to develop and announce in an appropriate manner and describe the corresponding lecture course, including the titles and sequence of the topics in the curriculum, recommended literature, grade formation and format of evaluation of the acquired knowledge and skills.”

NB: As of 01.11.2018 the Department of Chemistry and Biochemistry, comprised of two sections, is divided into two separate departments. Biochemistry section is denoted as Department of Biochemistry in the text, without changing the content of the established academic standard.

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