

**Approved by the Departmental Council on July 13, 2022**

## **ACADEMIC STANDARD FOR THE DISCIPLINE “CHEMISTRY”**

### **1. Objective of the chemistry course**

The main objective of the course is to present basic chemical terminology about the metabolic processes in the human body and in particular: buffer systems, enzymes, biological oxidation, chemical aspects of carbohydrate, lipid and amino acid metabolism, main groups of heterocyclic compounds and their biologically active derivatives. Students will also get acquainted with different instruments for the analysis of biological objects.

This objective is in compliance with:

- the mission and concept of Medical University of Plovdiv;
- discipline’s contents and credit rating (according to ECTS), both made apparent in the curriculum;
- qualification characteristics of the speciality;
- the educational degree (master).

The objective of the discipline is also designed according to its place within the overall curriculum and the discipline’s importance and timing in it. As a fundamental discipline, it is intended to serve the purposes of future steps of the educational plan.

### **2. Academic content**

The topics and time for lectures and practical exercises are printed and available at the department’s information board. The lecture content is organized chronologically in such a way that each consecutive lecture and the related practical classes use previously studied topics and terms.

### **3. Prerequisites**

Students must have general knowledge of chemistry and biology, from their high school education in order to successfully complete this course. The student must build on and upgrade this knowledge throughout the course of education.

### **4. Academic resources**

The academic staff for the chemistry course includes two associate professors, one chief assistant professor and three assistant professors. Three of them hold an educational and

scientific degree "Doctor (PhD)". Three members of the academic staff have a specialty in „Theoretical fundamentals of Medical chemistry “.

The lectures are given by a professor or associate professor with a scientific degree ( PhD or DSc) in the respective doctoral program. If necessary, at the discretion of the head of the department up to 30% of the lectures can be assigned to lecturers holding a PhD degree.

Practical classes are held by assistant professors or chief assistant professors with a Master's degree in chemistry or PhD, and are recruited after a selection exam.

## **5. Material resources**

For the purposes of the course the University provides the following facilities:

- 3 training laboratories equipped with the instrumentation and reagents for conducting the practical classes
- 1 scientific laboratory equipped with instrumentation and reagents for conducting experimental work

The department has the following instrumentation: UV-VIS spectrophotometers, centrifuges, analytical scales, pH – meters, a Varian HPLC system and a gas chromatograph, HPLC DAD MS Hitachi Chromaster system.

## **6. Lecture course**

Lectures are prepared and given in the form of multimedia presentations, which are handed out to the students in electronic format. Lectures' content and format are chosen by the leading lecturer.

## **7. Laboratory / practical classes**

Practical classes are held separately for each group. Methodological guidelines, manuals, protocol notebooks, work protocols and reagents for the experiments are provided. Tasks can be assigned individually for each student or they may require working in groups. When students work in a group, they are usually divided into subgroups. Students could receive personal tasks under the form of oral presentation for the next class, in which the assigned topic is discussed with the group.

During the semester, class tests are carried out. These tests check:

- student's knowledge
- results (obtained knowledge and skills) of the particular exercise.

## **8. Information resources. Basic literature. Websites**

All lecturers are required to have a prepared written set of lectures, practicals, training tests, and other course materials in the discipline, which are also available in electronic format.

A list of the main reference literature is presented, with priority being given to the available resources that are published as "basic literature". Internet resources where appropriate materials for the student's preparation can be found could also be recommended.

## 9. Textbooks and lecture courses

### *Basic*

1. Uzunova Y., Lecture course in Bioorganic chemistry (English course)
2. Principles of General Chemistry (v.1.0 or v 1.0M); <https://2012books.lardbucket.org/books/principles-of-general-chemistry-v1.0m/>
3. Bruice P.Y, Organic Chemistry, fourth edition

### *Additional*

1. Janice Gorzynski Smith, Principals of General, Organic and Biological Chemistry, 2012 and new editions
2. Karen C. Timberlake, An Introduction to General, Organic, and Biological Chemistry, 2015 and new editions

## 10. Control assignments

Students are occupied dynamically and intensively during the semester. It is assumed that the way in which knowledge and skills are acquired is an important factor in their depth, durability and applicability. Tutors should control student progress at least twice in the semester. Ongoing control can be performed through tests or control assignments. Students are provided with timely information and explanations on the control results, which assists their further preparation. Each student has the right to see his work within three working days, after the results are announced. Results from the class tests are included as part of the final mark for the semester.

## 11. Individual work and commitment of the students

The individual work of the students must be led by the assistant professors, who have to guide them in the literary sources, and methods for learning, as well. There are available training tests for individual work and student exercises.

## 12. Collaboration between students and the teaching staff

This collaboration consists of:

- The teacher's commitment to the students' preparation on current difficulties in learning the subject.
- Use of meeting hours for consultations.
- Scientific research with outstanding students.
- Including students in teams for scientific tasks, research projects, etc.

## 13. Exams

Ongoing assessments are conducted according to the curriculum to evaluate:

1. Student's results in practical classes, individual tasks, work of the student with the lecturer in scientific research etc.
2. At least two written tests should be conducted during the semester.

#### **14. Standards of evaluation:**

Standards for the evaluation of the students' achievements are carefully thought out, and clearly defined so that the student's assessments are objective and not dependant on the lecturer.

The final mark is determined on the basis of the written exam on the subject, the class tests and the oral exam. The exam regulations are designed to minimize the possibility of manipulating the results.

Based on the above, clear standards for evaluation are developed as follows:

- **Excellent (6)** – for shown individual and logical thinking, additional knowledge and skills, for excellent knowledge of the subject, creativity, interpretation of the concepts, skills to solve complex tasks and right argumentation for the decisions taken, accuracy and rich language culture of the presentation.
- **Very good (5)** – for well-developed key and additional knowledge, thinking and understanding the subject, good skills to apply the knowledge, adequate use of scientific concepts from the studied field, good language culture.
- **Good (4)** – for developed additional knowledge, good knowledge of the subject; but without being able to analyse ; comparatively good language culture, but with inaccuracies in the use of different concepts and terms.
- **Satisfactory (3)** – simple reproduction and key knowledge of the subject; not ready for analysis of the knowledge gained; poor language culture with a lot of mistakes.
- **Poor (2)** – for showing scant knowledge that cannot be the basis for the next levels of training.

At the beginning of the classes each semester the students must be informed about the evaluation standards, the procedures for conducting the ongoing control and the opportunities for obtaining a feedback on their progress during the semester.

#### **15. Final grade formation**

The final grade determines the extent to which the student has achieved the learning objective set at the beginning of the course. The final grade formation includes an assessment from the class tests and the final written and oral exam.

The final grade is calculated with the formula:

**$Q(\text{ final mark}) = k_1Q(\text{ average mark from the class tests}) + k_2Q(\text{ mark from the final written exam}) + k_3Q(\text{ mark from the oral exam})$**

**$K_1= 0.20; K_2=0.50; K_3=0.30$**

**If one of the components of the final grade is “Poor 2” or "Failed", the final grade is automatically set to “Poor 2”.**

#### **16. Documentation, result storage and control of the assessment procedure**

- Assessed students have the right and obligation to be informed about the assessment regulation procedures and results, and to make claims and complaints in case of violation of the current rules.

- The students' rights, in accordance with the meaning of the preceding paragraph, are guaranteed provided that technical omissions or errors have occurred (e.g. in the calculation or assessment) or that there are reasons for a large discrepancies between the knowledge, skills and competencies the student has actually shown and his/her final grade.
- Corrections of the grades in cases regarding the provisions of the previous paragraph shall be made in the Student Book, the examination report or the account in the General Registry only by the corresponding examiner of the discipline.
- Potential disagreements and claims on the part of the students should be directed in a written form to the assessment team, whose responsibility is to provide an argued answer by the end of the next working day.
- Revealed and proven cases of serious violation of the rights of the student in terms of assessing his / her knowledge, skills and competences are directed with a written complaint to the Vice-rector for quality and accreditation.

Exam materials are preserved and the students are informed about them. The period during which the students have access to the examination tests and results is up to 3 working days after the announcement of the results.

This requirement shall be met in accordance with the Higher Education Act Art. 56. par. 1, "The members of the academic board shall be obliged to develop and announce in an appropriate way a description of the provided by them course of lectures, including number, titles and sequence of topics of the curriculum, recommended literature, method of evaluation, formation of the final mark and forms of assessment of knowledge and skills."

The academic standard for the discipline Chemistry'' was approved by the Departmental Council on June 02, 2017 and was published on the Department's website.

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