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GENERAL AND INORGANIC CHEMISTRY

ACADEMIC STANDARD

1. Aim

The course aims at acquainting students with the general principles, theories and relationships in chemistry. It has a strong practical and problem-solving orientation and allows students to gain competence in a wide range of chemical skills, which can be regarded essential for the students' ability to assimilate the teaching material planned for all following semesters.

The course content includes essential information about the atomic structure, chemical bonding, various chemical systems and processes, periodic table, chemical elements and their compounds.

The aim correlates with the:

- university mission and vision;
- discipline's contents and credit rating (according to ECTS), both made apparent in the curriculum;
- qualification characteristics of the speciality;
- master academic degree.

The aim is entirely consistent with the place of the discipline within the overall curriculum in terms of discipline's importance and timing in the curriculum. As a fundamental discipline, it predominantly serves the next stages of education.

2. Educational content

The topics and the hours for lectures and practical exercises are posted on the website of the department. The course content is organized chronologically in such a way that each consecutive lecture and related practical classes use previously studied topics and terms. Thus, unnecessary overlap between "related" disciplines is avoided.

3. Prerequisites

As the course is delivered in the 1st semester, the teaching team relies on the students' knowledge of chemistry, mathematics and physics obtained at school.

4. Academic resources

The academic staff of the department includes 2 full professors, 2 associated professors, and 7 assistant professors. The lectures are delivered by a professor who has the necessary qualifications,

theoretical and practical knowledge in the field of inorganic chemistry. Laboratory work is conducted by a professor, assistant or PhD student.

5. Material resources

The Department of Chemical Sciences runs 2 classrooms and 6 laboratories equipped for experimental work (1 research laboratory and 5 training laboratories). The total laboratory area is 282 m^2 (equipped with the necessary equipment for conducting experimental work). There are 6 offices (equipped with computers and peripheral equipment). Internet access to the large scientific and reference databases is provided. Students have at their disposal a large collection of rocks and minerals, which is especially suitable for illustrating the content of the course.

6. Lecturing

Multimedia presentations have been prepared and made available to students after the corresponding lecture. The volume and format of the lectures are the choice of the leading lecturer.

7. Laboratory practice

They are held in small groups. Methodical and safety instructions are provided. Individual and team tasks (practical and computational) are assigned. The task is considered to have been successfully completed if the results obtained are correct (within the margin of tolerance for each specific experiment). As a result of the activities performed, the student prepares a report, which is checked by the laboratory instructor.

The teaching team does everything possible to make a connection between theory (lectures) and practice.

8. Information resources. Basic literature

In addition to multimedia presentations, the lecturer provides students with a list of recommended literature, divided into two groups: basic and additional. The basic literature list includes up-to-date editions that can be found in the library and/or bookstores. The list of additional literature contains textbooks that include more extensive and specialized information (beyond the scope of the course).

Basic literature

1. Julia Burdge, *Chemistry*, 4rd Edition, McGraw Hill, New York, 2017.
2. Steven Zumdahl, Susan Zumdahl, *Chemistry*, 9th Edition, Cengage Learning, Boston, 2014.
3. Duward *Shriver*, Mark Weller, Tina Overton, Jonathan Rourke, Fraser Armstrong, *Inorganic Chemistry*, 6th Edition, W. H. Freeman and Company, New York, 2014.

9. Control assignments

Students are occupied dynamically and intensely during the semester. The teaching staff monitor students' progress at least twice a semester. Ongoing control is performed through tests or control assignments. Students are provided with timely information about the obtained results.

10. Self-preparation and student's engagement

Self-preparation is the key to success. The teaching staff assists the student with homework and studies.

11. Collaboration between students and teaching staff

The collaboration may include the following aspects:

• Teacher's commitment to the student and his/her preliminary preparation, current difficulties in mastering the material and opportunities for providing an individual learning program.

• Use of consultation hours.

• Involving students in scientific problems, research, projects, etc.

12. Ongoing evaluations

Ongoing evaluations are given for the following activities:

1. Laboratory experiments, coursework and individual tasks, research work, etc.;
2. At least two written tests.

13. Standards of evaluation

The standards for assessing student achievement are carefully thought out, clearly designed and defined so that student evaluations are objective and independent of the subject of the teacher.

● 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 develop learning to analysis; 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 and gross errors that cannot be the basis for the next levels of training.

At the beginning of the semester, students are briefed on assessment standards, procedures for ongoing monitoring, and opportunities to receive feedback regarding their semester progress.

14. Final grade formation

The final assessment of the discipline is formed by several components: 1) results of current control of the theory; 2) results of current control over the tasks of the laboratory training; 3) results of the final semester exam.

The final grade of the student is determined by the formula:

$$Q_{\text{final score}} = 0.15Q_{\text{current control (lectures)}} + 0.15Q_{\text{current control (lab)}} + 0.7Q_{\text{final exam}}$$

If one of the components of the final grade is "Poor 2", the final grade is automatically set to "Poor 2".

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 5 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 of the mark and form of checking of knowledge and skills."

The academic standard was approved by the Departmental Council of Members on January 29, 2024, and published on the University website.

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