

| 2023/2024. ACADEMIC YEAR   |                         |                          |                         |                                   |  |  |               |
|--|-------------------------|--------------------------|-------------------------|-----------------------------------|--|--|---------------|
| PROGRAM OF STUDY (FOR STUDENTS OF 1ST YEAR)  |                         |                          |                         |                                   |  |  |               |
| <b>Full (Hun) name of the subject:</b> ÁLTALÁNOS ÉS SZERVETLEN KÉMIA II.   |                         |                          |                         |                                   |  |  |               |
| <b>Program:</b> Undivided program (pharmaceutical)   |                         |                          |                         |                                   |  |  |               |
| <b>Schedule:</b> full-time   |                         |                          |                         |                                   |  |  |               |
| <b>Short name of the subject:</b> Ált. kém.  |                         |                          |                         |                                   |  |  |               |
| <b>English name of the subject:</b> General and Inorganic Chemistry II.  |                         |                          |                         |                                   |  |  |               |
| <b>German name of the subject:</b> Allgemeine und Anorganische Chemie II   |                         |                          |                         |                                   |  |  |               |
| <b>Type of registration:</b> obligatory/obligatory elective/elective/criteria requirement  |                         |                          |                         |                                   |  |  |               |
| <b>Neptun code of the subject:</b> GYKGYK320E2A  |                         |                          |                         |                                   |  |  |               |
| <b>Responsible Department:</b> Department Of Pharmaceutical Chemistry  |                         |                          |                         |                                   |  |  |               |
| <b>Responsible tutor</b>   |                         |                          |                         | <b>Title, academic degree:</b>    |  |  |               |
| <b>Contact information:</b><br>- phone:<br>- email:  |                         |                          |                         |                                   |  |  |               |
| <b>Name of the persons responsible for the teaching of the subject:</b>  |                         |                          |                         | <b>Title, academic degree:</b>    |  |  |               |
| <b>Class per week:</b> 3 hours lecture<br>0 hours practices  |                         |                          |                         | <b>Credit point(s):</b> 3 credits |  |  |               |
| <b>Professional content, intent of acquirement and it's function in order to implement the goals of the program:</b><br>Establishing the fundamentals of inorganic, bioinorganic and environmental chemistry; acquiring the knowledge related to the physical chemistry of inorganic compounds occurring in pharmaceutical sciences, pharmaceutical industry and therapy.  |                         |                          |                         |                                   |  |  |               |
| <b>Short description of the subject:</b><br>Exploring the analytical methods of elements and inorganic compounds based on the fundamentals acquired in General Chemistry. Learning the main characteristics of elements and inorganic compounds with emphasis on their biological activity and therapeutic uses. This course relies on the curriculum covered in General Chemistry, complements and relies on the parallel courses Analytical Chemistry and Biophysics, all the while lays the foundation for future subjects (Analytical Chemistry, Organic Chemistry, Biochemistry, Pharmaceutical Technology and Pharmaceutical Chemistry). |                         |                          |                         |                                   |  |  |               |
| Course data  |                         |                          |                         |                                   |  |  |               |
| Recommended term   | Contact hours (lecture) | Contact hours (practice) | Contact hours (seminar) | Individual lectures               | Total number of contact hours/semester | Normal course offer  | Consultations |
| 2nd semester   | 42                      | -                        | -                       | -                                 | 42                                     | Autumn semester*<br><u>Spring semester</u><br>Both semesters<br>(* Please underline) | -             |

**Program of semester\*\***

**Topics of theoretical classes (pro week):**

1. Introduction to descriptive inorganic chemistry. Origin of elements, the elemental composition of the Universe, isotopes. Classification of elements, trends in the properties of nonmetals and metals, review of periodic properties.
2. Fundamental concepts of environmental chemistry. General description of nonmetals, noble gases and their compounds.
3. Occurance, properties and binary compounds of hydrogen (covalent, ionic, metallic and complex hydrides). Production of hydrogen, hydrogen in industry.
4. General description of the oxygen group. Occurance of the elements, chemical properties and preparation. Oxides, peroxides and superoxides. Chemical and pharmaceutical importance of sulfur, selenium, and their inorganic compounds.
5. General description of the nitrogen group. Occurance of the elements, chemical properties and preparation. Important compounds and their pharmaceutical relevance. The role of inorganic phosphate in biology.
6. General description of halogens, occurrence of the elements, chemical properties and preparation. Important compounds (halides, oxo acids, interhalogens). Pharmaceutical importance of halogen compounds.
7. General description of the carbon group. Occurance of the elements, chemical properties and preparation. Important compounds and their pharmaceutical relevance. Silicates, carbon and silicon compounds in comparison. Inorganic chemistry of boron.
8. General description of metals, preparation (metallurgy), alloys. Toxicity of metals.
9. Description of alkali metals, important compounds and their biological activity / pharmaceutical importance.
10. Occurance, chemical properties and important compounds of alkaline earth metals. Characterisation of the compounds of aluminum, boron; the elements and compounds of zinc group.
11. General description of transition metals (physical and chemical properties, common oxidation states) and important compounds in chemistry and pharmacy.
12. Structure of complex compounds, types of ligands, chelate complexes. Types of complex isomers. Magnetic and optical properties of complexes.
13. Bond theory of complexes.
14. Biomedical applications of complexes, description of host-guest complexes. Review.

**Topics of practical classes (pro week):**

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| <p><b>Other subjects (both compulsory and optional) relating to the transversal issues of the subject. Possible overlaps between subjects:</b></p> <p>Analytical Chemistry I. – the two subjects show overlap in the discussion of complexes, some element groups and their analytical chemistry.</p> <p>Calculation problems in general and inorganic chemistry – this subject discusses the calculation problems presented in the General and Inorganic Chemistry II. subject.</p>  |
| <p><b>Schedule of consultations:</b> at the request of students</p>   |
| <p><b>Course requirements</b></p>   |
| <p><b>Prerequisites:</b><br/>General and Inorganic Chemistry I.</p>   |
| <p><b>Conditions of attending the classes, amount of acceptable absents, way of presentation of leave, opportunity for makeup:</b><br/>Attending the lectures as provided in the STUDY AND EXAMINATION REGULATIONS.</p>   |
| <p><b>The grading method; the conditions for getting the signature; the number, topic(s) and date(s) of the mid-term assessments, (reports, term tests), and the process in which they contribute to the final grade; and the possibility of their retake or their upgrading retake (as provided in §§ 25-28 of the STUDY AND EXAMINATION REGULATIONS): -</b></p>   |
| <p><b>Requirements of signature(as provided for in STUDY AND EXAMINATION REGULATIONS § 29):</b><br/>Attending the lectures as provided in the STUDY AND EXAMINATION REGULATIONS.</p>  |
| <p><b>Number and type of projects students have to perform independently during the semester and their deadlines: -</b></p>   |
| <p><b>Type of the semester-end examination:</b> signature*/practical grade*/ <u>comprehensive examination</u>*/final/end-term examination*</p> <p><b>Examination requirements:</b> as published by the education-research department on the MOODLE interface by the start of the academic term.</p> <p>The semester-end final exam consists of an oral exam from 3 topics chosen by the student from the topic list plus one problem to be solved.<br/>- The topic list is provided on the MOODLE interface of the department by the start of the academic term.<br/>For a successful final exam a satisfactory grade (2) must be reached on all sub-parts described above.</p> |
| <p><b>Form of the semester-end examination:</b> written*/<u>oral</u>*/combined examination/<b>practical examination/the assessment of completing project work (according to STUDY AND EXAMINATION REGULATIONS 30.§)*</b> (* Please underline)</p>   |
| <p><b>The possibility and conditions for offering grades: -</b></p>   |
| <p><b>A list of the basic notes, textbooks, resources and literature that can be used to acquire the knowledge necessary to master the curriculum and to complete the assessments, **** with exact description about which of them is required to acquire which part of the syllabus (e.g. description based on topics)), as well as the main technical and other aids and study aids that can be used:</b></p> <p>lecture notes</p>  |

**In the case of a subject lasting more than one semester, the position of the teaching/research department on the possibility of parallel enrolment and the conditions for admission\*\*\*\*:**

yes\*/no\*/on and individual assesment basis\* (*Please underline*)

**The course description was prepared by::**

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