



## Syllabus

**Term:** 2026/27/1      **Subject name:** Fundamentals of Chemistry II. - laboratory      **Subject code:** ENBIOB0204

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**Unit (Unit code)** (BIOLOGIA)

**Lecturer responsible for the course:** PONGRÁCZ Péter Tibor

**Requirement:** Term mark

**Classes per week :** 0/0/3

**Classes per term:** 0/0/39

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### Purpose of education:

*Practice:* The aim of the lab is to get familiar with the most important tools and measuring methods in chemistry. The practice also focuses to prepare the students how to perform the most important calculations for preparing proper labnotes.

*Seminar:* The seminar is a part of the laboratory practice, where calculations and chemical problems relating to topics of the laboratory practice will be solved. The basic theory of the practice will also be discussed on the seminar.

### Contents:

*Practice:*

1. week: Laboratory safety and rules. Requirements.
2. week: Standardization of hydrochloric acid solution.
3. week: Determination of total calcium and magnesium ion concentration.
4. week: pH-measurement of aqueous solution of different type of salts. Interpretation.
5. week: Preparation of buffer solution.
6. week: Determination of mass percent composition of Mg/MgO mixture.



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### Contents:

- 7. week: Flame test of alkali metals and alkaline earth metals.
- 8. week: Amphoteric properties of zinc and aluminum.
- 9. week: The chemistry of nitrites and nitrates.
- 10. week: The chemistry of sulfites and sulfates.
- 11. week: The chemistry of halogen compounds.
- 12. week: Chemistry of coordination compounds.
- 13. week: Supplementary practice.

### *Seminar:*

- 1. week: Introduction. Requirements.
- 2. week: pH of the solution of strong acids and bases.
- 3. week: pH of the solution of weak acids and bases.
- 4. week: pH of the solution of salts.
- 5. week: pH of the solution of buffers.
- 6. week: Calculation of the concentration of solutions I.



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### Contents:

7. week: Test.
8. week: Calculation of the concentration of solutions II.
9. week: Balancing of redox reaction.
10. week: Stoichiometry I.
11. week: Stoichiometry II.
12. week: Naming coordination compounds.
13. week: Test

### System of examining and valuation:

*Practice:* Prior to each practice we check the preparedness of the students by small tests including 2-4 questions. These questions are randomly chosen from the preprepared 8-12 questions found by the end of each labnote. If the result of the small test is less than 50% than the laboratory practice cannot be started and grade 1 is given for the small test as well as for the labnote. The grades for the small tests and for the labnotes are averaged and weighed as 1/3 and 2/3, respectively to give the final average. Each of the average should be higher than 2,00 in order to obtain the final grade. The labnote has to be prepared and finished within a week. If a student fails to prepare the labnote by promptly than a delay of each week decreases the grade by one grade. Consequently after a 4-week-delay only grade 1 can be given. At least 75% of grade of the practices has to be better than grade one. In case of these fulfillments if the weighed average is higher than 4,50; 3,70; 2,76 and 2,00 than the grade obtained is five, four, three and two, respectively.

*Seminar:* During the semester two tests will be written. The seminar will be accepted, if the average of the results of the tests is at least 40%. If the result of the tests is above 40%, the following grades can be given for the students: 40-59.9% → 2 (pass); 60-74.9% → 3 (satisfactory); 75-87.49% → 4 (good); >87.5% → 5 (excellent). Notice! The seminar does not have separate grade, it is part (1/3) of the final grade of the Fundamental Chemistry Practice.



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### System of examining and valuation:

*Final grade of the course:* the final grade of the Fundamental Chemistry Practice II. can be calculated weighted arithmetic of the result of the seminar (1/3) and the result of the laboratory practice (2/3). The grade of the practice is calculated by weighted arithmetic of the results of tests (theory part, 1/3) and the grades of the measurements (practical part, 2/3). Average can be calculated: (i) if the average of the results of the tests and the average of the grades of the measurements are at least 2.00, (ii) the result of the tests in the seminar is above 40%. If these criteria are met, the student receives a final grade: >2.00 is fail (1), 2.00-2.75 is pass (2), 2.76-3.69 is satisfactory (3), 3.70-4.49 is good (4) and 4.50-5.00 is excellent (5).

### Bibliography:

Laboratory notes (electronic version) including the fundamentals of the given practice and calculations of the seminar are available from the instructor.

### Bibliography: