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| ***Title of the course:*****Chemistry II.** | ***NEPTUN-code:***RMXCA2KBNF | ***Weekly teaching hours:*** *l+cw+lw*2+0+2 | ***Credit*:** 4***Exam type****:* e |
| ***Course leader:***Csiszér Tamás Ph.D.**Lecturer:** Dr. Mészárosné Dr. habil. Bálint Ágnes | ***Position:*** associate professor | ***Required preliminary knowledge:*** - |
| ***Curriculum:*** |
| The course aims to introduce the basics of organic chemistry necessary for professional courses. During the practices, the students get laboratory knowledge essential to fulfil the practices of professional subjects successfully. Basic concepts of organic chemistry. The structure and properties of alkanes. Nomenclature. The structure, reactions, and properties of open-chain unsaturated hydrocarbons. The structure, reactions, and properties of closed-chain saturated and unsaturated hydrocarbons. The production, physical and chemical properties of halogen-containing organic compounds. The grouping, physical and chemical properties of oxygen-containing organic compounds. The grouping, physical and chemical properties of nitrogen-containing organic compounds. |
| ***Curriculum Description:*** |
| **week** | **Topics of lectures and practices** |
| 1. | **Lecture:** Hydrocarbons, Alkanes and Cycloalkanes; Alkenes and Alkynes; Aromatic Hydrocarbons |
| 2. | **Practice:** Basics of laboratory work (safety rules). Several topics from the first semester. Practice calculations. |
| 3. | **Lecture**: Naming Hydrocarbons; Derivatives of Hydrocarbons; Organic Compounds Containing Oxygen; Organic Compounds Containing Nitrogen |
| 4. | **Practice:** Calculation of titrations. Volumetric analysis. Weak Base-acid titration (2 points). |
| 5. | **Lecture:** Organic Compounds Containing Sulphur; Polymers: synthetic and biological 1. |
| 6. | **Practice:** Titration of ammonium-chloride. (2 points) |
| 7. | **Lecture:** Polymers: synthetic and biological 2. |
| 8. | **Practice:** Test 1. (titrations). (5 points). Complexometric titration (2 points) |
| 9. | **Lecture:** Proteins |
| 10. | **Practice:** Test 2. (calculation on thermochemistry and organic compounds) (5 points). Determination of Vitamin C concentration. (2 points) |
| 11. | **Lecture:** Scientific Student Conference |
| 12. | **Practice:** National holiday |
| 13. | **Lecture:** Carbohydrates. Nucleic Acids |
| 14. | **Practice:** Test 3. (organic chemistry) (5 points)Spectrophotometry (2 points) |
| ***Mid-term requirements:*** |
| *Participation in occupations:*Attendance is ***compulsory.*** **Lectures + laboratory work (measurements and written tests).** The weekly schedule is shown above—practice and lecture times according to schedule.It is compulsory to attend lectures and laboratory exercises. Up to 30% of lectures may be missed, but not laboratory exercises.Both tasks are mandatory, as is participation in the classes. Achieving the two specified minimums is a condition to get a sign and a note. |
| *Midterms, protocols, reports, etc.:*1) During the laboratory practice, three short calculation tests will be written (it is worth up to 5 points) (a total of 15 points)2) Laboratory measurements are worth up to 2 points each (total 10 points). The written exercises and submitted laboratory protocols must fulfil a minimum of 13 points out of 25 points. 3) The theoretical classroom test will be in the period of exams (up to 75 points can be achieved - minimum.: 38 points) The weekly schedule is shown above, and practice and lecture times are according to schedule. |
| *The method of obtaining a signature/exam mark:*Marks:>50: 1; 51-60: 2; 61-75: 3; 76-85: 4; 86-100: 5In the case of failure of the mid-term mark (1), a correction is possible according to paragraph 47§ (7) of the Student Requirements Regulation (HKR). |
| ***Professional competencies:*** |
| * Knowledge of general and specific mathematical, natural, and social scientific principles, rules, relations, and procedures as required to pursue activities in the field of environment protection.
* Comprehensive knowledge of the basic features and interrelations of environmental elements and systems and the environmentally harmful substances affecting them.
* Knowledge of the main methods to examine the quantity and quality features of environmental elements and systems, their typical measuring instruments and limitations, and methods for evaluating measured data.
* Able to perform basic tests of the quantity and quality characteristics of environmental elements and systems using state-of-the-art measuring instruments; draw up and implement measurement plans; and evaluate data.
* Able to solve tasks of water, soil, air, radiation, and noise protection, as well as waste treatment and processing at the proposal level; to participate in preparing decisions; to perform authority audits; and to take part in the operation of these technologies.
* Able to reveal deficiencies in the technologies applied and process risks and initiate mitigation measures after becoming familiar with the technology concerned.
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| ***Literature:*** |
| Compulsory:- e-book: Ebbing-Gammon: General Chemistry, Houghton Mifflin Company, Boston New York, 2007 (in the e-learning system) Chapter: Organic Chemistry- lecture presentations in the system e-learningRecommended:John D. Roberts, Ross Stewart, Marjorie C. Caserio: Organic Chemistry: Methane to macro-molecules, Publisher: W. A. Benjamin, INC., New York 1971 |