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| **Course title**Advanced chemistry laboratory - analytical chemistry – ERASMUSLaboratorium zaawansowanej chemii - chemia analityczna – ERASMUS | **ECTS code**13.3.1252 |
| **Name of unit administrating study** Faculty Chemistry |
| **Studies**

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| **Field of study** | **Type** | **Form** |  |
| Chemistry | Bachelor  | Full-time studies  |  |
| Chemistry | Master  | Full-time studies  |  |

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| **Teaching staff**dr Paweł Niedziałkowski, dr Grzegorz Olszewski; mgr Aleksandra Moniakowska |
| **Forms of classes, the realization and number of hours**  | **ECTS credits 3**classes 20 htutorial classes 10 hstudent’s own work 45 hTOTAL: 75 h - 3 ECTS |
| 1. **Forms of classes, in accordance with the UG Rector’s regulations**

laboratory classes |
| 1. **The realization of activities**

In-class |
| 1. **Number of hours**

20 h - laboratory |
| **The academic cycle**winter |
| **Type of course**facultative | **Language of instruction**English |
| **Teaching methods**Laboratory experiments | **Form and method of assessment and basic criteria for evaluation or examination requirements**  |
| **A. Final evaluation, in accordance with the UG study regulations** course completion (with a grade) |
| **B. Assessment methods**Writing test  |
| **C. The basic criteria for evaluation** or exam requirements Evaluation criteria in accordance with the UG Studies Regulations; |
| **Required courses and introductory requirements** no requirements |
| **Aims of education**Acquaintance with modern research techniques in analytical chemistry. Developing of the skill to choose the optimal research method for a given problem. Developing of the skills of independent detection and determination of various chemical substances. Acquiring of proficiency in the estimating the expected result and determination of the sources and scale of occurring errors during experiments.**Convergent to:** physical chemistry, analytical chemistry |
| **Course contents**Acquaintance with modern methods used in analytical and instrumental chemistry. Presentation of researchproblems and performing discussion on the selection of an advanced analytical method. Quantitative analysisof selected compounds (e.g. determination of the content of dyes in leaves and flowers, fluorides in toothpastes,phosphates: in water, drinks and washing powders, acids in drinks, caffeine in coffee) |
| **Bibliography of literature** Fundamentals of Analytical Chemistry Skoog D. Crouch Stanley R., Holler James F., West Donald MStabin M., Radiation Protection and Dosimetry, Springer, 2007. |
| **Knowledge**1. Recognizes and describes the methods used in instrumental analysis in the determination of chemical compounds used in everyday life.2. Describes the physicochemical properties of substances occurring in the natural environment.3. Cites and understands the basic concepts and principles of industrial property protection and copyright.4. Estimates the expected analysis result.5. Analyzes the value of the determination error and its potential sources. |
| **Skills**1. Plans and uses the appropriate methods to solve the given analytical problem.2. Develops the given problem in the field of the application of advanced analytical methods.3. Organizes the workplace in accordance with the requirements of the analysis of the chemical substance and according to BHP rules -Occupational Safety and Health Administration (OSHA) rules.4. Critically evaluate obtained results during the analysis.5. Discusses and integrate the information obtained in the group to verify the research hypothesis. |
| **Social competence**1. Takes the challenge of conducting advanced chemical analyzes.2. Can estimate the content of components present in chemical substances used in everyday life. |