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| **Course title**Physical chemistry – ERASMUS Chemia fizyczna – ERASMUS  | **ECTS code**13.3.1279 |
| **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 hab. Piotr Storoniak, prof. UG |
| **Forms of classes, the realization and number of hours**  | **ECTS credits 4**classes 30 htutorial classes 20 hstudent’s own work 50 hTOTAL: 100 h - 4 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**

30 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**preparing final grade based on partial grades received during semester |
| **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**Familiarization of students with:- description of reversible processes,- functioning of nature on the basis of thermodynamics,- physicochemical description of the adsorption phenomena,- phenomenological description of chemical changes on the ground of chemical kinetics,- description and applications of catalysis phenomena,- description and use of electrochemical processes. |
| **Course contents**Doing experiments in laboratory:- determining dissociation constant on the basis of spectroscopy measurements- calculations based on the Lambert-Beer law- applications of the spectroscopic measurements- principle of operation of the UV-VIS spectrophotometer- dipole moment vs. molecular geometry, methods of determining of dipole moment- polarizability, molar refractivity, refractive index- calorimetric measurements (heat of combustion, calorimetric bomb, plot of the dependence of the temperature vs time for calorimeter)- phase diagrams, lever rule, fractional distillation of azeotropic and zeotropic mixtures |
| **Bibliography of literature** Peter Atkins, Julio de Paula - Physical Chemistry |
| **Knowledge**A student:• has knowledge on the basic laws and theories of physical chemistry,• knows how to properly describe the investigated physicochemical phenomena, using the language of higher mathematics,• identifies the equipment that he/she was exposed to during study and is able to explain its operation rules. |
| **Skills**A student can:• carry out the planned experiments in the laboratory,• analyze and solve problems using the known laws and methods,• correctly draw conclusions from the results of the measurements and prove their correctness on the basis of the availableliterature,• solve calculation problems using appropriate theories and formulas. |
| **Social competence**A student:• can work independently,• adhere to the safety rules during execution of experiments,• comply with the rules concerning the executed experiments,• can cooperate and interact in the group adopting various roles. |