|  |  |
| --- | --- |
| **Course code** | CS\_CC1 |
| **Type and description** | **CC** - Core Course |
| **ECTS credit** | 2 |
| **Course name** | **Advanced Inorganic Chemistry** |
| **Course name in Polish** | Zaawansowana chemia nieorganiczna |
| **Language of instruction** | English |
| **Course level** | 8 PRK |
| **Course coordinator** | prof. dr hab. inż. Wojciech Wolf |
| **Course instructors** | prof. dr hab. inż. Wojciech Wolf,  prof. dr hab. inż. Marek Główka,  dr hab. inż. Agnieszka Czylkowska |
| **Delivery methods and course duration** | |  | **Lecture** | **Tutorials** | **Laboratory** | **Project** | **Seminar** | **Other** | **Total of teaching hours during semester** | | --- | --- | --- | --- | --- | --- | --- | --- | | Contact hours | 25 | 0 | 0 | 0 | 0 | 0 | 25 | | E-learning | No | No | No | No | No | No |  | | Assessment criteria (weightage) | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |  | |
| **Course objective** | Providing the advanced knowledge on the current inorganic chemistry. Revealing connections between structure (molecular and supramolecular) of inorganic compounds and their properties, including theory and methods which can be applied in the development and synthesis of new compounds with demanded properties. Presenting of the descriptive models of inorganic compounds structure. Showing the contemporary concepts of the advanced inorganic solution chemistry. |
| **Learning outcomes** | At the end of the course the student is able to:  1. describe the principles and concepts of contemporary inorganic chemistry – ***effects W1, U2, K1***  2. discuss and define the chemical and physicochemical properties of different types of inorganic compounds – ***effects U2, K1***  3. correlate the chemical and physicochemical properties of a compound with its structure – effects U1, K1  4. identify the applications of inorganic compounds ***– effects W1, U2, K1***  5. design a synthesis method of an inorganic compound with demanded structure and properties – ***effects U1, U3, K1***  6. describe analytical methods used in contemporary inorganic chemistry – ***effects W1, U2*** |
| **Assessment methods** | Verification of learning outcomes:  **Effects 1-6**: preparation of a written work on a given subject  The final grade consists of:  The preparation of a written work - 100% |
| **Prerequisites** | Basic knowledge of inorganic chemistry, organic chemistry, analytical chemistry and crystallography |
| **Course content with delivery methods** | LECTURE  1. principles and concepts of advanced inorganic chemistry  2. intricate inorganic and coordination compounds  3. coordination polymers and supramolecular inorganic compounds  4. experimental methods used in contemporary inorganic chemistry  5. synthesis methods of inorganic chemistry (including sonochemical and solvothermal methods)  6. solid state chemistry of inorganic compounds  7. order, periodicity and structural repeatability in solid state  8. activation of inorganic molecules  9. advanced inorganic solution chemistry  10. descriptive models of inorganic compounds structure  11. the correlation of properties with the structure of the inorganic compounds. |
| **Basic reference materials** | 1. Materials provided by the lecturer.  2. F. Albert Cotton, Geoffrey Wilkinson, Carlos A. Murillo, Manfred Bochmann, Advanced Inorganic Chemistry, 6th Edition, A Wiley-Interscience publication.  3, Supramolecular Chemistry, 2nd Edition, Jonathan W. Steed B.Sc., Ph.D., Jerry L. Atwood B.S., Ph.D.,John Wiley & Sons, Ltd. |
| **Other reference materials** | 1. Scientific articles on the contemporary inorganic chemistry.  2. Recommended journals: Inorganic Chemistry, Dalton Transactions, Crystal Growth and Design, CrystEngComm and Ultrasonics Sonochemistry. |
| **Average student workload outside classroom** | 30 hrs |
| **Comments** | - |
| **Last update** | 2019-03-09 |