|  |  |
| --- | --- |
| The title of the course | **Materials Science: Ceramic Materials** |
| Faculty | [Faculty of Mechanical Engineering and Computer Science](http://eng.ath.bielsko.pl/index.php/faculties/gerg) |
| The level of studies | Undergraduate (BA)  Postgraduate (MA)  Engineer (BSc) |
| Semester | Winter |
| The form of classes and number of hours | Laboratories |
| Language of instruction | English |
| The number of ECTS | **3 ECTS** |
| Teacher | Izabella Rajzer, PhD |
| The aims of the course  (maximum 500 characters) | This course is an introductory course in the structure, properties, and applications of ceramics and composites. |
| The content of the course: main topics and key ideas | * Introduction to ceramic materials (2h) * Oxide ceramics: Structure, Mechanical Properties, Processing, Examples of applications (2h) * Non-oxide ceramics: Structure, Mechanical Properties, Processing, Examples of applications (2h) * Glasses (1h) * Carbon Materials for Advanced Technologies (1h) * Ceramics matrix composites: different types, their preparation and properties (including nano-composites) (2h). |
| Didactics methods | Presentations and discussions |
| Course requirements | presentation/attendance |
| Literature (basic and supplementary) | 1. C. Barry Carter,M. Grant Norton. Ceramic Materials: Science and Engineering. Springer 2013.  2. A. Brent. Strong Fundamentals of Composites Manufacturing: Materials, Methods and Applications. 2008.  4. M. F. Ashby, Technology of the 1990s: Advanced Materials and Predictive Design, Philosophical Transactions of The Royal Society of London A322, 393–407, 1987.  5. F. L. Matthews and R. D. Rawlings, Composite Materials: Engineering and Science, Chapman & Hall, London, 1994. |
| The effects of the education   * knowledge * skills * social competences | Having successfully completed the course, the student will:  -Have a basic knowledge of ceramic materials: their structure, processing, properties, and performance.  - Have practical experience in the search, retrieval, and analysis of scientific papers/literature.  - Have practical experience in presentation of scientific information. |