Course title: **Selected methods of materials characterization**

Institute/Division: **FACULTY OF CHEMICAL ENGINEERING AND TECHNOLOGY**

Number of contact hours: **30 hours** (10 h lectures & 20 h exercises)
Course duration: 2 semester (6th semester of regular I cycle studies – spring/summer)
ETCS credits: **2**

Course description:

The course covers the basics and also more advanced issues related to methods for characteristic of physicochemical properties of both inorganic and organic compounds. The laboratory consists of exercises of applying different methods such as Fourier-transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), ultraviolet–visible spectroscopy (UV-Vis), nuclear magnetic resonance (NMR), atomic absorption spectrometry (AAS) and optical microscopy. The lecture will be related to the theoretical fundamentals of these methods.

Education effects :

- knowledge : student knows the basis of most applied methods for characterization of physicochemical properties of organic and inorganic compounds; recognizes their features, utility and limitations
- skills: student can select the suitable method for characterization of interesting features of both inorganic and organic compounds; is able to prepare the samples for analysis; know how to prepare a meaningful report from performed analysis
- social: student is able to work independently and in the group when solving the problems related to characteristic of physicochemical properties of both inorganic and organic compounds

Literature:

1. Dudley H. Williams, Ian Fleming, Spectroscopic Methods in Organic Chemistry 6th Edition, McGraw-Hill Education, London, 2007
2. Reimer L., Scanning electron microscopy, Springer, 1998
3. Yang Leng, Materials Characterization: Introduction to Microscopic and Spectroscopic Methods, John Wiley & Sons, 2010

Assessment method: Final test, completing the laboratories (presence and delivering of the reports from each performed exercise)
Prerequisites: Basic course in organic and inorganic chemistry and technology
Primary target group: All specialties students

Lecturer:

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Remarks: Selectable