Table 5.2 Course specification

Level: Bachelor
Course title: Thermal Analysis of Inorganic Compounds and Materials
Status: elective
ECTS: 5
Requirements: none
Learning objectives The course has the following objectives: - Introduces students to thermoanalytical techniques used for analysis of inorganic compounds and materials; - Provide students with skills for practical work in a thermoanalytical laboratory; - Improve students' ability to carry out simple, routine thermoanalytical measurements; - Provide students with basic knowledge to interpret the obtained results and recognize the main points of the results.
Learning outcomes By the end of this course, students will be able to: - Apply thermoanalytical techniques for routine analysis of inorganic compounds and inorganic materials - Specify optimal experimental conditions in accordance with the aim of the measurements; - Analyze the obtained results by determining the solvent content of the sample, its thermal stability and the end of thermal decomposition process; - Present the obtained results with stress on significant points of decomposition process
Syllabus *Theoretical instruction* This course introduces students to basic thermoanalytical principles and the effect of heat on inorganic materials' properties. In addition, the course familiarize students with the most common used thermoanalytical techniques: thermogravimetry (TG), derivative thermogravimetry (DTG), differential thermal analysis (DTA), differential scanning calorimetry (DSC), simultaneous methods of thermal and evolved gas analysis (EGA), their working principles and applications. The specific information about the samples properties, obtained by a single technique would be highlighted. The course enables students to study the effect of experimental conditions on the results of measurements. It also explores the principles of analysis of measurements' results. *Practical instruction* The practical part of this course introduces students to experimental work in a thermoanalytical laboratory. The lab work enables students to study the effect of heat on the physicochemical properties of selected inorganic compounds and materials. In addition, it allows students to understand the effect of different experimental conditions of thermal measurements on the results through measuring simple inorganic compounds and materials. During lab work the students learn how to prepare an experimental plan, as well as determination of thermal stability, purity, melting point, etc.