

Level: master			
Course title: Thermal analysis			
Status: elective			
ECTS: 5			
Requirements:			
Learning objectives			
<ul style="list-style-type: none"> - Obtaining basic knowledge on thermoanalytical methods. - Combined methods of thermal analysis. - Thermal methods in qualitative and quantitative analysis and in materials science. - Application of thermoanalytical instruments in practice. - Principles of selecting the experimental conditions. - The interpretation of experimental results. 			
Learning outcomes			
After completing this course, student is able to:			
<ul style="list-style-type: none"> - understand the principles of thermoanalytical techniques; - take into account factors, which have effect on thermal measurements, - apply thermoanalytical methods, - choose the experimental conditions for the measurements, - combine different thermoanalytical techniques, - analyze and present the results of the measurements. 			
Syllabus			
<i>Theoretical instruction</i>			
The effect of temperature change on the properties of the sample. Application of different thermoanalytical techniques: thermogravimetry (TG), derivative thermogravimetry (DTG), differential thermal analysis (DTA), differential scanning calorimetry (DSC), thermomechanical and dynamic mechanical analysis (TMA and DMA), simultaneous techniques of thermal analysis and evolved gas analysis (EGA). Mechanism and kinetics of thermal decomposition.			
<i>Practical instruction</i>			
Thermal stability of new compounds. Synthesis in solid state. Determination of melting point, glass transition, purity, polymorphism. Determination of thermal properties and quality control of different compounds and materials (pharmaceuticals, food additives, polymers, etc.) by thermal measurements. Computation of kinetic parameters of the thermal decomposition.			
Weekly teaching load			Other:
Lectures: 2	Exercises: 2	Other forms of teaching:	