

Study program	Type of study (cycle)		Third Cycle	
	Study program title		Doctoral Study in Physics	
Course title	SURFACE ANALYSIS OF MATERIALS			
Course code	Semester	Course status	ECTS credits	Teaching hours
	I /II	ELECTIVE	10	30
Course objectives and outcomes	<p>The aim of this course is to familiarize students with modern experimental techniques used to characterize advanced materials through active usage of analytical instruments.</p> <p>Learning outcomes:</p> <ul style="list-style-type: none"> <li>- to understand theoretical background of scanning electron microscopy (SEM) and atomic force microscopy (AFM).</li> <li>- to apply theoretical knowledge in experimental work.</li> </ul>			
Course content				
<p>Surface analysis. Basics of scanning electron microscopy (SEM). Characteristics of the JEOL-JSM IT 200L microscope. Practical examples.</p> <p>Basics of atomic force microscopy (AFM). Characteristics of Nanosurf CoreAFM. Practical examples.</p> <p>When required, access to UV-vis spectrophotometer will be enabled to students.</p>				
LITERATURE			EVALUATION OF STUDENT'S WORK	
<p>[1] Peter Eaton, Paul West, Atomic Force Microscopy, Oxford University Press, USA, Year: 2010, eBook, ISBN: 0199570450,9780199570454</p> <p>[2] Joseph Goldstein, Dale E. Newbury, David C. Joy, Charles E. Lyman, Patrick Echlin, Eric Lifshin, Linda Sawyer, J.R. Michael, Scanning Electron Microscopy and X-ray Microanalysis, Springer, Year: 2003, eBook, ISBN: 0306472929,9780306472923</p>			Type of evaluation	Points
			Seminar paper	100
			Total	100
Remark				
<p>Students propose a subject of their investigation for the seminar paper in accordance with their interests and available materials. The proposal needs to be accepted by the course professor. The research includes obligatory experimental work in the area of surface characterization methods. The research results are to be written in the form of scientific paper and presented orally.</p>				