

<b>Level:</b> master			
<b>Course title:</b> LABORATORY METHODS AND PRACTICAL SKILLS			
<b>Status:</b> obligatory			
<b>ECTS:</b> 5			
<b>Requirements:</b> -			
<b>Learning objectives</b> Learning objective is to obtain basic knowledge and skills for laboratory analyses.			
<b>Learning outcomes</b> The aim of this course is to teach students general principles of laboratory activities, master certain methods and practical skills and become qualified for work in different laboratories.			
<b>Syllabus</b> <i>Theoretical instruction</i> Principles of biological safety in laboratory. Basic concepts of solution concentration and calculation, buffer solution, agents added to solutions and solution storage. Preparative and analytical centrifugations . Electrophoretic techniques - electrophoresis on agarose gel, native and SDS PAGE, IEF, 2DE. Optical methods – basic principles of spectrophotometric methods. Immunochemical methods (immunoelectrophoresis, RIA, Western blot, ELISA). Theoretical basics of light microscopy. Working principles of light field microscope. Working principles of fluorescent microscope. Methods of improving contrast in light microscopy. Basic techniques of specimen preparation for light microscopy. Staining methods in microscopy (histochemistry, immunochemistry, immunofluorescence, <i>in situ</i> hybridization). Cell culture – laboratory work for cell culture; biology of cell cultures (morphology, growth, kinetics and evolution of cell line, differentiation); use of cell lines and primary cultures. <i>Practical instruction</i> Solution preparation: measurement of solids and liquids. Use of pH metre. Centrifugation (minifuge, centrifuge, ultracentrifuge). Native and SDS PAGE. Calculation of substance concentration by means of spectrophotometric methods. Immunoelectrophoresis and ELISA. Microscopy (invert microscopes, fluorescent microscopes and microscopic techniques. Cell culture – work under sterile conditions, preparation of the medium, maintenance of cell lines and cell manipulation, cell preparation and plating for further experimental work.			
<b>Weekly teaching load</b>			Other: -
Lectures:1	Exercises: -	Other forms of teaching: 3	OTF:-