

Study Programme: BSc in Biology			
Course Unit Title: Animal Cell and Tissue Culture			
Course Unit Code: OB060			
Name of Lecturer(s): Assoc. Prof. Edward Petri, PhD; Assoc. Prof. Jelena Marković, PhD			
Type and Level of Studies: Bachelor's studies			
Course Status (compulsory/elective): Elective			
Semester (winter/summer): Summer			
Language of instruction: English			
Mode of course unit delivery (face-to-face/distance learning): Face-to-face			
Number of ECTS Allocated: 6			
Prerequisites: None			
Course Aims: The aim of the course is to provide students with basic theoretical knowledge and practical experience in the field of cell culture propagation, the establishment of primary cultures, and the applications of cell and tissue culture in molecular biology and biomedical research.			
Learning Outcomes: After successful course completion, students will have acquired basic knowledge and experience necessary for experimental work with cell cultures, which will facilitate research work in laboratories of different profiles.			
Syllabus: <i>Theory</i> The concept of tissue culture. Types of tissue culture. Techniques for performing aseptic work. Establishment of primary culture, isolation and cell selection, cell culture propagation, transformation and immortalization, cloning and selection of specific cell types. Cell growth media, subculture, freezing and defrosting of cells. Viability tests (color rejection test, color import test, LDH release, MTT essay, Amalar Blue essay). Tests for measuring cell proliferation, growth curves. Heterologous expression of proteins in cell cultures. Application of cell cultures in molecular biology. Application of cell cultures in medical research, biotechnology and industry. <i>Practice</i> Introduction to laboratory equipment and conditions necessary for cell and tissue culture work. Aseptic techniques. Cell counting, determination of cell concentrations. Supplementation of cell lines. Freezing and defrosting cell lines. Determination of cell viability. Measurement of proliferation of cells with a colorimetric test with tetrasolium salts. Determination of cytotoxic activity with a colorimetric test.			
Required Reading: 1. Freshney RI (2010) Culture of animal cells: a manual of basic technique and specialized applications, 6th ed. Wiley-Blackwell. 2. Mather JP, Roberts PE (1998) Introduction to Cell and Tissue Culture: Theory and Technique. Biomedical and Life Sciences. 3. Celis JE (2006) Cell Biology: A Laboratory Handbook, 3rd ed. Elsevier Inc.			
Weekly Contact Hours: 4	Lectures: 2	Practical work: 2	
Teaching Methods:			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	Final exam	points
Colloquia	15	written exam	30
Seminar	20	oral exam	30
Attendance	5	