





Educational objectives (max. 6 items)

C1. To familiarize students with the most important principles and techniques of culturing cells and tissues.

C2. To familiarize students with the use of cell and tissue cultures in research: the study of cytotoxicity of drugs, mechanisms and processes of biotransformation

C3. Presentation of options for further use *in vitro* culture in medicine: tissue engineering, transplantology, oncology

**Education result matrix for module/course in relation to verification methods of the intended education result and the type of class**

Number of course education result	Number of major education result	Student who completes the module/course knows/is able to	Methods of verification of intended education results (forming and summarising)	Form of didactic class <b>**enter the abbreviation</b>
W01.	B.W34.	knows and can describe a cell culture laboratory equipment, basic reagents and laboratory appliances	oral response	LC
W02.	C.W19.	explains the principles of maintaining living cells outside the body ( <i>ex vivo</i> ) under aseptic conditions	activity in the discussion, oral response	LC
W03.	C.W39.	describes the basic methods of drugs cytotoxicity study and the phenomenon of drug resistance of cancer cells	activity in the discussion	LC
W04.	B.W34.	provides examples of practical use of various <i>in vitro</i> methods and describes the use of tissue bioengineering in medicine	activity in the discussion	LC
W05.	B.W23.	knows the basic range of issues of stem cells and their applications in medicine	activity in the discussion, oral response	LC
U01.	B.U14.	is able to work in aseptic conditions	presentation	LC
U02.	B.U14.	is able to observe the cells in an inverted microscope	presentation	LC
U03.	B.U14.	is able to change the culture medium and perform passages of cells	presentation	LC

\*\* L - lecture; SE - seminar; AC – auditorium classes; MC – major classes (non-clinical); CC – clinical classes; LC – laboratory classes; SCM – specialist classes (magister studies); CSC – classes in simulated conditions; FLC – foreign language course; PCP practical classes with patient; PE – physical education (obligatory); VP – vocational practice; SS – self-study, EL – E-learning .

Please mark on scale 1-5 how the above effects place your classes in the following categories:

communication of knowledge, skills or forming attitudes:

Knowledge: 5

Skills: 3

**Student's amount of work (balance of ECTS points)**

Student's workload (class participation, activity, preparation, etc.)	Student Workload (h)
1. Contact hours:	<b>10</b>
2. Student's own work (self-study):	<b>3</b>
Total student's workload	<b>13</b>
ECTS points for module/course	<b>0,5</b>
Comments -	

**Content of classes** (please enter topic words of specific classes divided into their didactic form and remember how it is



translated to intended educational effects)	
Lectures -	
Seminars -	
Classes (LC)	
1. Work rules under aseptic conditions. The culture environment - understanding of the types of cell culture media and other necessary reagents, culture flasks. The basic equipment in cell culture laboratory. Establishment and maintenance of the cell culture. (5 hours)	
2. Assessment of cancer cells sensitivity to cytostatics. The multidrug resistance and methods of overcoming this phenomenon. The use of <i>in vitro</i> cultures in science and medicine. Tissue and organ models - tissue engineering. Observation of the different cell types, work with inverted microscope. (5 hours)	
Other -	
Basic literature (list according to importance, no more than 3 items)	
1. Human cell culture: volume V, F. Koller, John Masters, Bernhard R Palsson, Springer-Verlag GmbH, 2001	
Additional literature and other materials (no more than 3 items)	
1. Basic cell culture protocols, Helgeson, Humana press, 2004	
Didactic resources requirements (e.g. laboratory, multimedia projector, other...)	
Laboratory, laminar, CO <sub>2</sub> incubator, inverted microscope, laboratory desks, laboratory plastics, cell culture reagents, seminar room, multimedia projector	
Preliminary conditions (minimum requirements to be met by the student before starting the module/course) -	
Conditions to receive credit for the course (specify the form and conditions of receiving credit for classes included in the module/course, admission terms to final theoretical or practical examination, its form and requirements to be met by the student to pass it and criteria for specific grades)	
The course ends with credit (without an examination).	
Conditions for subject completion is the <b>active participation in the discussion</b> ending each class.	
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<b>Grade:</b>	<b>Criteria</b> (only for courses/modules ending with an examination)
Very Good (5.0)	
Good Plus (4.5)	
Good (4.0)	
Satisfactory Plus (3.5)	
Satisfactory (3.0)	



**Name and address of module/course teaching unit, contact: telephone and e-mail address**

Department of Histology and Embryology

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**Coordinator / Person responsible for module/course, contact: telephone and e-mail address**

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**Signature of person responsible for module**

Uniwerytet Medyczny we Wrocławiu  
KATEDRA I ZAKŁAD  
HISTOLOGII I EMBRIOLOGII  
prof. dr hab. Marzenna Podhorska-Okolów

**List of persons conducting specific classes: full name, degree/scientific or professional title, discipline, performed profession, form of classes.**

**1. dr Sylwia Borska (adiunct, medical biology) – LC**

Date of Syllabus development

20.06.17

Syllabus developed by

Dr Sylwia Borska

**Signature of Faculty Dean**

Wrocław Medical University  
FACULTY OF MEDICINE  
VICE DEAN FOR STUDIES IN ENGLISH  
Prof. dr hab. Piotr Dziąg

**Signature of Head of teaching unit**

Uniwerytet Medyczny we Wrocławiu  
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