Appendix 5
to Resolution No. 15630
of Senate of Wroclaw Medical University
of 30 March 2016

Syllabus for academic year 2019/2020			
Description of the course			
Module/Course	Cell and tissue culture	Group of detailed education results	
		Group code B, C	Group name Scientific basis of medicine, Preclinical study
Faculty	Medicine		
Major	medicine		
Specialties	not applicable		
Level of studies	Uniform magister studies X 1st degree studies ☐ 2nd degree studies ☐ 3rd degree studies ☐ postgraduate studies ☐		
Form of studies	X full-time ☐ part-time		
Year of studies	I (first)	Semester	☐ Winter X Summer
Type of course	☐ obligatory ☐ limited choice X free choice / elective		
Course	X major ☐ basic		
Language of instruction	☐ Polish X English ☐ other		
* mark ☐ with an X			

Number of hours

Form of education

Unit teaching the course	Lectures (L)	Seminars (SE)	Auditorium classes (AC)	Major Classes – not clinical (MC)	Clinical Classes (CC)	Laboratory Classes (LC)	Classes in Simulated Conditions (CSC)	Practical Classes with Patient (PCP)	Specialist Classes – magister studies (SCM)	Foreign language Course (FLC)	Physical Education obligatory (PE)	Vocational Practice (VP)	Self-Study (Student's own work)	E-learning (EL)
Winter Semester -														
Summer Semester														
Division of Histology and Embryology						10								
TOTAL per year: 10 hours														
						10								

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 ***enter the abbreviation*
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 (*ex vivo*) 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 *in vitro* 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:	10
2. Student's own work (self-study):	3
Total student's workload	13
ECTS points for module/course	0,5
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 *in vitro* 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_2 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 med by the student to pass it and criteria for specific grades)

The course ends with credit (without an examination **The condition for credit is to prepare a presentation on a given subject and answer the questions from the material learned during the classes.** Each absence must be made up, including rector's days or dean's hours.

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Grade:	Criteria for course
Very Good (5.0)	correct answer to min. 16 question
Good Plus (4.5)	correct answer to min. 14 question
Good (4.0)	correct answer to min. 12 question
Satisfactory Plus (3.5)	correct answer to min. 10 question
Satisfactory (3.0)	correct answer to min. 8 question

Grade:	Criteria for exam (if applicable)
Very Good (5.0)	
Good Plus (4.5)	
Good (4.0)	
Satisfactory Plus (3.5)	
Satisfactory (3.0)	

Name of unit teaching course:	Division of Histology and Embryology

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Person responsible for course:	Dr Sylwia Borska
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List of persons conducting specific classes:	*degree/scientific or professional title*	*Discipline*	*Performer profession*	*Form of classes*
Sylwia Borska	PhD	medical biology	adiunct	LC

Date of Syllabus development

15.07.2019

Syllabus developed by

Dr Sylwia Borska

Signature of Head of teaching unit

Uniwersytet Medyczny we Wrocławiu
ZAKŁAD HISTOLOGII I EMBRIOLOGII
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Signature of Faculty Dean

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