Appendix No.3
to Resolution No. 2303
of Senate of Wroclaw Medical University
of 28 April 2021

Syllabus for academic year: 2021/2022 Training cycle: 2017/2018-2021-2022			
Description of the course			
Course	REGENERATIVE MEDICINE	Group of detailed education results Group code F	SPECIALISED CLINICAL SCIENCES (SURGICAL)
Faculty	Dentistry		
Major	dentistry		
Level of studies	X uniform magister studies		
Form of studies	X full-time		
Year of studies	V	Semester:	X winter
Type of course	X free choice / optional		
Language of study	X English		

Number of hours

Form of education

	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)	Foreign language Course (FLC)	Physical Education (PE)	Vocational Practice (VP)	Directed Self-Study (DSS)	E-learning (EL)
Winter semester:													
Department of Immunopathology and Molecular Biology ..... (Unit realizing the course)													
Direct (contact) education[1]						30							
Distance learning[2]													

Educational objectives (max. 6 items)

C1. The development of regenerative medicine in dentistry and medicine.

C2. Stem cells culture in autologous system. Biological and clinical implications.

C3. Types of bioactive materials use in 3D and 2D culture system.

C4. Clinical studies : currently data on cells stem use in therapy and tissue engineering in medicine and dentistry.

C5. Periodontal bone defect repair by the grafting of dental pulp stem cells or bioactive construction.
C6. Clinical potential of dental pulp stem cells for cells-based therapy of various system diseases in regenerative medicine. The risk of stem cells in therapy.

Education result for course in relation to verification methods of the intended education result and the type of class:

Number of deteiled education result	Student who completes the course knows/is able to	Methods of verification of intended education results	Form of didactic class **enter the abbreviation*
F.W.11.	Explains diagnostic techniques and types of therapy in periodontology and oral mucosal diseases.	Oral presentation on topic from regenerative medicine or tissue engineering. Microscopic assessment of cell samples after in vitro experiments.	CL
F.U.8.	Describes the defects in mucosa tissue in oral cavity, assess cells samples using microscope after in vitro studies.	evaluation of the presentation given by the student	CL
F.U.16.	uses descriptions of pathological changes in cells, tissues and organs according to the basic mechanisms in regenerative medicine		
K.8.	participates in communicating with colleagues in the team	assessment of student attitudes	CL
K.9.	is ready to critically evaluate the results of scientific research and justify its position accordingly		

* L- lecture; SE- seminar; AC- auditorium classes; MC- major classes (non-clinical); CC- clinical classes; LC- laboratory classes; CSC- classes in simulated conditions; PCP- practical classes with patient; FLC- foreign language course; PE- physical education; VP- vocational practice; DSS- directed self-study; EL- E-learning

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

Student's workload (class participation, activity, preparation, etc.)	Student Workload
1. Number of hours of direct contact:	30
2. Number of hours of distance learning:	
3. Number of hours of student's own work:	
4. Number of hours of directed self-study	
Total student's workload	30

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ECTS points for course	1

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)

Classes

1. Development of regenerative medicine; currently clinical and scientific results.
2. Biological materials use in regenerative medicine and tissue engineering.
3 Biomaterials use to construct 3D or 2D membranes (scaffolds). Clinical application.
4 Stem cells in regenerative medicine; isolation, culture, immunophenotype.
5 Tissue engineering in bone repair.
6 Experimental and clinical studies on tissues regeneration and repair in dentistry.
7. Mesenchymal stem cells seeded on 3D structures. Application in periodontology, adhesion, viability markers expression of stem cells before and after differentiation into osteoblast.
8. Chondrocytes and stem cells in regeneration of cartilage tissue.
9. Differentiation of human dental pulp stem cells into osteoblasts odontoblast – practical studies.
10. Bio-engineering in dentistry . Design of bioimplant Evaluation of 3D scaffold using IF staining.
11. Culturing of chondrocytes and stem cells at different in vitro conditions.
12. Analysis of differentiated cells (osteo/odontoblast) using immunohistochemical techniques DAPI staining, morphological features. Risk of in vitro studies.

Basic literature

1. Principles of regenerative medicine [Dokument elektroniczny] / Anthony Atala [i in.]. - 2nd ed. - London : Elsevier Academic Press, 2011.
2. Regenerative medicine for the treatment of urinary incontinence / edited by Klaudia Stangel-Wójcikiewicz. - Kraków : Jagiellonian University Press, cop. 2016

Additional literature and other materials

Preliminary conditions:
4th year of studies completed,

Conditions to receive credit for the course:

	Criteria for courses ending with a credit
Credit	**Oral presentation – topic from regenerative medicine. Laboratory practices in in vitro culture, analysis of stem cells features , stem cells criteria for therapy.**

Unit realizing the course:	Department of Immunopathology and Molecular Biology
Unit address:	Street Bujwida 44, 50-343 Wrocław
Telephone:	697 770 614
E-Mail:	julia.bar@umed.wroc.pl

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Person responsible for the course:	prof. dr hab. Julia Bar
Telephone:	697 770 614
E-Mail:	julia.bar@umed.wroc.pl

List of persons conducting specific classes:

Name and surname	Degree/scientific or professional title	Discipline	Performed profession	Form of classes
Julia Bar	Prof. dr hab	Medical science	Teacher	CL

Date of Syllabus development

18.06.2021

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Syllabus developed by

prof. dr hab. Julia Bar

Signature of Head(s) of teaching unit(s)

Julia Bar

Dean's signature

Uniwersytet Medyczny we Wrocławiu
WYDZIAŁ
LEKARSKO-STOMATOLOGICZNY
DZIEKAN

prof. dr hab. Marcin Mikulewicz