

Course code																																	
Type and description	EC – elective subjects from the discipline of Chemical sciences																																
ECTS credit	1																																
Course name	Peptides / proteins - drugs, drug transporters and materials for regenerative medicine																																
Course name in Polish	Peptydy/białka – leki, transportery leków oraz materiały dla medycyny regeneracyjnej																																
Language of instruction	English																																
Course level	8 PRK																																
Course coordinator	prof. dr hab. inż. Beata Kolesińska																																
Course instructors	prof. dr hab. inż. Beata Kolesińska																																
Delivery methods and course duration	<table border="1"> <thead> <tr> <th></th> <th>Lecture</th> <th>Tutorials</th> <th>Laboratory</th> <th>Project</th> <th>Seminar</th> <th>Other</th> <th>Total of teaching hours during semester</th> </tr> </thead> <tbody> <tr> <td>Contact hours</td> <td>0</td> <td>0</td> <td>0</td> <td>5</td> <td>0</td> <td>0</td> <td>5</td> </tr> <tr> <td>E-learning</td> <td>no</td> <td>no</td> <td>no</td> <td>no</td> <td>no</td> <td>no</td> <td>no</td> </tr> <tr> <td>Assessment criteria (weightage)</td> <td>0</td> <td>0</td> <td>0</td> <td>100%</td> <td>0</td> <td>0</td> <td>100%</td> </tr> </tbody> </table>		Lecture	Tutorials	Laboratory	Project	Seminar	Other	Total of teaching hours during semester	Contact hours	0	0	0	5	0	0	5	E-learning	no	no	no	no	no	no	no	Assessment criteria (weightage)	0	0	0	100%	0	0	100%
	Lecture	Tutorials	Laboratory	Project	Seminar	Other	Total of teaching hours during semester																										
Contact hours	0	0	0	5	0	0	5																										
E-learning	no	no	no	no	no	no	no																										
Assessment criteria (weightage)	0	0	0	100%	0	0	100%																										
Course objective	The aim of the subject is to acquaint students with the possibilities of practical use of proteins/peptides in medicine and related sciences. In particular, the applications will focus on the use of peptide/proteins as drugs, systems used in the drug delivery and materials useful in regenerative medicine. The most important limitations in the direct use of proteins/peptides will be presented as well as methods for eliminating these limitations.																																
Learning outcomes	<p>A student after completing the course can:</p> <ol style="list-style-type: none"> <li>1. characterize the peptide / protein used to drugs, discuss the method of eliminating the limitations of peptides as medicaments - effects <i>W1 P8S_EG, U1 P8S_UW</i></li> <li>2. describe the use of peptides / proteins as a drug delivery system and discuss their advantages and limitations - effects <i>W1 P8S_EG, U1 P8S_UW</i></li> <li>3. characterize peptide / protein materials used in regenerative medicine, and discuss their advantages and limitations - effects <i>W1 P8S_EG, U1 P8S_UW</i></li> </ol>																																
Assessment methods	<p>Learning outcomes 1 - 3 – written colloquium</p> <p>Learning outcomes 1-3- presentation</p> <p>The final grade consists of:</p> <p>Score from the written test - 70%</p> <p>Presentation - 30%</p>																																
Prerequisites	Basics of biochemistry and chemistry of natural compounds																																
Course content with delivery methods	<p>part I</p> <p>Peptides / proteins used as medicines, the main methods of their preparation.</p> <p>Problems associated with the use of peptide / protein-based drugs.</p>																																

	<p>Methods for improving the pharmacokinetic and pharmacodynamic properties of peptide / protein drugs.</p> <p>part II</p> <p>Peptides / proteins as a drug delivery system.</p> <p>Cell penetrating peptides as a universal tool for transporting medicines, biomarkers and biopolymers.</p> <p>Human serum albumin as an internal drug delivery system.</p> <p>part III</p> <p>Peptides / proteins used in regenerative medicine</p> <p>Conjugates of polysaccharides, biodegradable polymers and bioinorganic compounds with proteins / peptides</p> <p>Modulation of biological activity of materials used in regenerative medicine.</p>
Basic reference materials	<p>1) Lecturer material,</p> <p>2) Peptides as Drugs: Discovery and Development, Editor(s): Bernd Groner, Wiley-VCH Verlag GmbH &amp; Co. KGaA, 2009</p> <p>3) Therapeutic Protein Drug Products. Practical Approaches to formulation in the Laboratory, Manufacturing, and the Clinic, Editors: Brian Meyer, Woodhead Publishing, 2012</p> <p>4) Cell-Penetrating Peptides. Methods and Protocols, Editors: Langel, Ülo (Ed.), Springer, 2011</p> <p>5) Peptides and Proteins as Biomaterials for Tissue Regeneration and Repair, Edited by: Mário A. Barbosa and M. Cristina L. Martins, Woodhead Publishing, 2018</p> <p>6) Peptides and Peptide-based Biomaterials and their Biomedical Applications, Editors: Sunna, Anwar, Care, Andrew, Bergquist, Peter (Eds.), Springer, 2017</p>
Other reference materials	Current scientific articles, given by the lecturer
Average student workload outside classroom	15h
Comments	
Last update	September 2020