

COURSE DESCRIPTION (SYLLABUS)

1.	Course: Molecular Basis of Neurodegenerative Diseases
2.	Language of instruction: English
3.	Faculty: Faculty of Biotechnology
4.	Course/module code: (the code will be set soon)
5.	Course/module type (<i>mandatory or elective</i>): elective
6.	Programme: Medical Biotechnology
7.	Study cycle: 2nd cycle
8.	Year: 1st
9.	Semester (<i>autumn or spring</i>): spring
10.	Form of tuition and number of hours: Lecture: 15 h
11.	Coordinator(s): Marek ŁUCZKOWSKI, PhD
12.	Initial requirements (<i>knowledge, skills, social competences</i>): Basic knowledge of neurophysiology, completed courses in human physiology (animals), biochemistry and cell biology.
13.	Objectives: The aim of the course is to present the current state of the art on the medical, behavioral and social aspects of the neurodegenerative diseases (Alzheimer's disease, Parkinson's disease, multiple sclerosis, amyotrophic lateral sclerosis, Huntington's disease and spongiform encephalopathies) constituting the greatest civilization challenge of the developed world. The potential molecular mechanisms of neuronal degeneration with particular reference to the so-called amyloid cascade hypothesis will be discussed in detail. Current methods of therapy and diagnosis of these diseases as well as potential therapies will be characterized.

14.	<p>Content:</p> <ul style="list-style-type: none"> • Social and medical aspects of neurodegenerative diseases (Alzheimer's disease; Parkinson's disease, multiple sclerosis, amyotrophic lateral sclerosis, spongiform encephalopathies); • The amyloid cascade hypothesis and its updates; • Marker proteins of neurodegenerative diseases (APP, Amyloidβ, tau, synuclein, SOD, etc.); • Neurotropic factors; • Blood-brain barrier; • Oxidative stress in neurodegenerative diseases with particular emphasis on the role of metal ions; • Diagnosis of neurodegenerative diseases; • Current and potential therapies for neurodegenerative diseases 	
15.	<p>Learning outcomes:</p> <p>Student:</p> <ul style="list-style-type: none"> • provides qualitative and quantitative descriptions of complex biological phenomena and processes; • possesses advanced knowledge of medical and biological sciences, namely biochemistry, biomedicine, and molecular biology; • efficiently makes use of scientific literature in the field of biomedicine; reads professional literature in English; • shows ability to formulate legitimate opinions on the basis of data derived from different sources; • understands the need for a systematic review of professional literature in order to broaden and deepen his or her knowledge. 	<p>Outcome symbols:</p> <p>K_W01, K_W03, K_U02, K_U07, K_K05</p>
16.	<p>Recommended literature:</p> <p>None, students look for professional, scientific papers by themselves.</p>	
17.	<p>Methods of verification of the assumed learning outcomes:</p> <ul style="list-style-type: none"> • written exam in the form of an open test 	
18.	<p>Conditions of earning credits:</p> <ul style="list-style-type: none"> • positive test result; • individual oral presentation (optional). 	
19.	<p>Student's workload:</p>	
	<p>Activity</p>	<p>Number of hours for the activity</p>
	<p>Hours of instruction (as stipulated in study programme) :</p> <p>Lecture: 15 h</p>	
	<p>Student's own work:</p> <ul style="list-style-type: none"> • Scientific literature reading – 10 h 	

	<ul style="list-style-type: none">• Preparation for the test – 10 h	
	Total number of hours:	35 h
	Number of ECTS:	2 ECTS