

## COURSE DESCRIPTION (SYLLABUS)

1.	Course:  <b>Plant Physiology</b>
2.	Language of instruction: <b>English</b>
3.	Faculty: <b>Faculty of Biotechnology</b>
4.	Course/module code: <b>29-BT-S1-E4-EnPPh</b>
5.	Course/module type ( <i>mandatory or elective</i> ): <b>mandatory</b>
6.	Programme: <b>Biotechnology</b>
7.	Study cycle ( <i>1st/2nd</i> ): <b>1st cycle</b>
8.	Year: <b>2nd</b>
9.	Semester ( <i>autumn or spring</i> ): <b>spring</b>
10.	Form of tuition and number of hours: Lecture: <b>30 h</b>
11.	Coordinator(s): <b>Małgorzata Janicka, Prof.</b>
12.	Initial requirements ( <i>knowledge, skills, social competences</i> ): <b>Basic knowledge of chemistry, biochemistry, cell biology and genetics.</b>
13.	Objectives: <b>Acquiring knowledge on the physiological processes, they regulation and integration in plants.</b>
14.	Content: <ul style="list-style-type: none"> <li>• <b>metabolic compartmentation of plant cell, membrane transport;</b></li> <li>• <b>water transport in plants, solute uptake and transport in plant;</b></li> <li>• <b>energy transformation in cell membranes, electron and proton transport in thylakoid membranes, PSI and PSII structure, Q cycle, cyclic and non-cyclic electron transport;</b></li> <li>• <b>dark phase reactions in C<sub>3</sub>, C<sub>4</sub> and CAM;</b></li> </ul>

	<ul style="list-style-type: none"> <li>• molecular interactions between light and dark phase of photosynthesis;</li> <li>• molecular physiology of acquisition, transport and assimilation of N and S;</li> <li>• regulatory molecules, signal perception and transduction;</li> <li>• hormonal regulation of the plant growth and development;</li> <li>• photomorphogenesis and mechanism of phytochrome action.</li> </ul>	
15.	<p>Learning outcomes:</p> <p>Student:</p> <ul style="list-style-type: none"> <li>• knows the mechanism of water and nutrients uptake and transport;</li> <li>• understands the light energy transformation in chloroplasts;</li> <li>• describes main reactions of CO<sub>2</sub> assimilation in C<sub>3</sub>, C<sub>4</sub> and CAM plants as well as uptake and assimilation of sulfur, phosphate and different nitrogen forms;</li> <li>• explains the dependency of physiological processes on environmental changes;</li> <li>• characterizes the plant growth and understands regulatory function of fitohormones and abiotic factors.</li> <li>• is competent to characterize main metabolic processes in plants, understands regulation and interactions between them;</li> <li>• reads and understands scientific literature in the field of biochemistry, molecular biology and plant physiology in English;</li> <li>• is creative and permanently updates biological and biotechnological knowledge.</li> </ul>	<p>Outcome symbols:</p> <p>K1_W01, K1_U03, K1_K01</p>
16.	<p>Recommended literature:</p> <ul style="list-style-type: none"> <li>• Buchanan B.B. et al., <u>Biochemistry and Molecular Biology of Plants</u>, 2000;</li> <li>• Taiz L., Zeiger E., <u>Plant Physiology</u>. Sinauer Associates, Inc., 2010.</li> </ul>	
17.	<p>Methods of verification of the assumed learning outcomes:</p> <p><b>written test</b></p>	
18.	<p>Conditions of earning credits:</p> <p><b>written exam,test</b></p>	

19.	Student's workload:	
	Activity	Number of hours for the activity
	Hours of instruction (as stipulated in study programme) :	30 h
	<ul style="list-style-type: none"> <li>• Lecture</li> </ul>	
	Student's own work:	45 h
	<ul style="list-style-type: none"> <li>• Reading literature: <b>15 h</b></li> <li>• Preparing for exam: <b>30 h</b></li> </ul>	
Total number of hours:	<b>75 h</b>	
Number of ECTS:	<b>3 ECTS</b>	