

(faculty stamp)

COURSE DESCRIPTION

Z1-PU7

WYDANIE N1

Strona 1 z 2

1. Course title: PLANT MOLECULAR BIOLOGY AND PHYSIOLOGY		2. Course code		
3. Validity of course description: 2014/2015				
4. Level of studies: MSc programme				
5. Mode of studies: full time stationary studies				
6. Field of study: BIOTECHNOLOGY		(FACULTY SYMBOL) Rau1		
7. Profile of studies: General academic				
8. Programme: bioenergy engineering				
9. Semester: 1				
10. Faculty teaching the course: Institute of Automatic Control, Rau1				
11. Course instructor: dr Magdalena Skonieczna				
12. Course classification: specialization course				
13. Course status: compulsory				
14. Language of instruction: English				
15. Pre-requisite qualifications: Basics of prokaryotic cell structure and knowledge about basic cellular metabolism and processes.				
16. Course objectives: Lectures will cover issues related to the intracellular processes of plants, associated with energy production and essential metabolic pathways. During practical laboratories students will be introduced to issues related to metabolic pathways and bioenergetic processes of the prokaryotic cell.				
17. Description of learning outcomes:				
Nr	Learning outcomes description	Method of assessment	Teaching methods	Learning outcomes reference code
W1	Student has a broader and wide knowledge about biology, molecular biology and biochemistry.	Written test	Traditional lecture, multimedia lecture	K_W01,
W2	Student knows the possibilities of the use of different groups of organisms (bacteria, fungi, plants) in the production of biofuels, with particular emphasis on intracellular metabolism in prokaryotes.	Written test, Laboratory reports	Traditional lecture, multimedia lecture, Laboratory exercise	K_W05, K_W09,
W3	Student knows the details of the methods, techniques, technologies, tools and materials, allowing for the use of biological material in bioenergetics - from single molecules through complex molecules, macromolecules into unicellular and multicellular organisms.	Written test, Laboratory reports	Traditional lecture, multimedia lecture, Laboratory exercise	K_W13
U1	Student has the ability to acquire information about cellular processes and is able to develop its own research issues in the field of bioenergetics.	Written test, Laboratory reports	Laboratory exercise	K_U01, K_U04,
U2	Student can make own data analysis and simulation of natural phenomena using advanced theoretical and experimental methods in the course of exercise.	Laboratory reports	Laboratory exercise	K_U08, K_U11, K_U09, K_U10, K_U12, K_U19
K1	Student is able to independently make decisions regarding the best solutions to present and defend the proposed solution during exercise.	Laboratory reports	Laboratory exercise	K_K02, K_K03, K_K07

18. Teaching modes and hours Lecture 15 h, Laboratory 15 h		
19. Syllabus description: Lectures: <ul style="list-style-type: none"> • Molecular basis of cellular processes • Intracellular metabolism • Cell signaling • Plants transportation • Plant nutrition and growth • Physiology of photosynthesis • Soil micro- and macroelements circuit Laboratories: <ul style="list-style-type: none"> • Flow cytometric assays • Fluorescent microscopy assays • In vitro plant cells culture 		
20. Examination: No		
21. Primary sources: Kawiak „Podstawy cytofizjologii”. Nicholls i Ferguson „Bioenergetyka”. Lehninger „Biochemia”. Szwejkowscy „Fizjologia roślin”.		
22. Secondary sources:		
23. Total workload required to achieve learning outcomes		
Lp.	Teaching mode :	Contact hours / Student workload hours
1	Lecture	15/15
2	Classes	0/0
3	Laboratory	15/15
4	Project	0/0
5	BA/ MA Seminar	0/0
6	Other	15/15
	Total number of hours	45/45
24. Total hours: 90		
25. Number of ECTS credits: 3		
26. Number of ECTS credits allocated for contact hours: 2		
27. Number of ECTS credits allocated for in-practice hours (laboratory classes, projects): 1		
26. Comments:		

Approved:

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(date, Instructor's signature)

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(date, the Director of the Faculty Unit signature)