

FACULTY OF CHEMISTRY					
SUBJECT CARD					
Name in English	Biotechnology with introduction to industrial microbiology				
Main field of study (if applicable)					
Specialization (if applicable)					
Profile:	academic				
Level and form of studies:	2nd level – supplementary semester /full-time				
Kind of subject	obligatory				
Subject code	BTC024022				
Group of courses	NO				
	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	30			15	
Number of hours of total student workload (CNPS)	60			30	
Form of crediting	crediting with grade			crediting with grade	
For group of courses mark (X) final course					
Number of ECTS points	2			1	
including number of ECTS points for practical (P) classes				1	
including number of ECTS points for direct teacher-student contact (BK) classes	1			0,5	
PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES					
1.					
SUBJECT OBJECTIVES					
C1 Cognoscence of structure and functions of basic cells structures					
C2 Cognoscence of fundamentals of gaining energy and nutrients requirements of living cells					
C3 Cognoscence of possibilities of application of living systems in biotechnology and industrial microbiology - fundamentals					
SUBJECT EDUCATIONAL EFFECTS					
related to knowledge:					
PEK_W01 – Student knows the structures and functions of macromolecules building living cells					
PEK_W02 – Student knows the basics about cells metabolism					
PEK_W03 – Student knows the basic methods of introduction of living systems into the industrial technology					
Related to skills					
PEK_U01 – Students can apply the principles of biotechnology to prepare the presentation on defined subject from the area of modern biotechnology					
PROGRAMME CONTENT					
Form of classes - lecture					Number of hours
Lec 1	Fundamentals: proteins – general structure and functions				2

Lec 2	Fundamentals: proteins – general structure and functions	2
Lec 3	Fundamentals: – enzymes – classification and mode of action	2
Lec 4	Fundamentals: – enzymes – classification and mode of action	2
Lec 5	Fundamentals: – redox cycle in living cells	2
Lec 6	Fundamentals: – energy gaining cycle in living cells	2
Lec 7	Fundamentals: – nutrition requirements of microbes (bacteria and fungi)	2
Lec 8	Fundamentals: – basics of microbiological techniques	2
Lec 9	Fundamentals: – basics of microbiological techniques	2
Lec 10	Fundamentals: – methodology of scaling of microbial processes	2
Lec 11	Fundamentals: – methodology of scaling of microbial processes	2
Lec 12	Industrial processes with microbes - examples	2
Lec 13	Industrial processes with microbes - examples	2
Lec 14	Subjects repetitions. Final colloquium – I attempt.	2
Lec 15	Subjects repetitions. Final colloquium – II attempt.	2
	Total hours	30
Project		Number of hours
Proj 1	Students presentation of novel trends in industrial microbiology	15
TEACHING TOOLS USED		
N1	Lecture – multimedia presentation	
N2	Project – multimedial presentation	
EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT		
Evaluation F – forming (during semester), P – concluding (at semester end)	Educational effect number	Way of evaluating educational effect achievement
P - lecture	PEK_W01- PEK_W03	Colloquium
P-project	PEK_U01	Grading of individual presenattion
PRIMARY AND SECONDARY LITERATURE		
<u>PRIMARY LITERATURE:</u>		
„Modern Industrial Microbiology and Biotechnology” Second Edition, <u>Okafor Nduka</u> ; 2018, ISBN13 (EAN): 9781138550186		
SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)		
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