


KAPITAŁ LUDZKI
 NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez
 Unię Europejską w ramach
 Europejskiego Funduszu
 Społecznego

UNIA EUROPEJSKA
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 FUNDUSZ SPOŁECZNY


Course title		ECTS code	
Molecular biology of nucleic acids (lecture)		13.1.0555	
Name of unit administrating study			
null			
Studies			
faculty	field of study	type	second tier studies (MA)
Intercollegiate Faculty of Biotechnology UG-MUG	Biotechnology	form	full-time
		specialty	all
		specialization	all
Teaching staff			
prof. dr hab. Igor Konieczny			
Forms of classes, the realization and number of hours		ECTS credits	
Forms of classes		3	
Lecture			
The realization of activities			
classroom instruction			
Number of hours			
Lecture: 30 hours			
The academic cycle			
2021/2022 winter semester			
Type of course		Language of instruction	
obligatory		english	
Teaching methods		Form and method of assessment and basic criteria for evaluation or examination requirements	
problem-focused lecture		Final evaluation	
		Examination	
		Assessment methods	
		<ul style="list-style-type: none"> - written exam with open questions - written exam (test) - written exam (long written answer/problem solving) 	
		The basic criteria for evaluation	
		<p>The following components will be assessed:</p> <ul style="list-style-type: none"> - understanding by the student of the complex processes connected with nucleic acids and their significance in biotechnology - knowledge concerning issues of molecular biology of nucleic acids presented during lectures and currently discussed in specialist literature - knowledge of English and specialist terminology allowing students to understand the discussed issues <p>The final grade will result from the above elements. The student must obtain a passing grade for each of the mentioned elements.</p> <p>Assessment will be performed on the basis of an examination, where questions will concern the above elements</p>	
Method of verifying required learning outcomes			
Required courses and introductory requirements			
A. Formal requirements B. Prerequisites The learning outcomes for the basic courses Molecular Biology, Biochemistry and Genetics are required			

Aims of education	
<p>The aim of the course is to let students understand the molecular basis of metabolism of nucleic acids, acquire knowledge allowing to interpret and analyze the results of contemporary research concerning nucleic acids. Get acquainted with complex issues connected with the processes of transcription, replication, repair, recombination, transposition, and the significance of these processes in biotechnology (K_W01)</p> <p>Students will acquire knowledge concerning the newest research connected with the metabolism of nucleic acids (K_W03)</p> <p>Students will perfect their English to the extent that will allow them to understand utterances and read, with understanding, scientific literature concerning molecular biology of nucleic acids (K_U03)</p>	
Course contents	
<p>History of research on metabolism of nucleic acids - key experiments</p> <p>Notions of replicon and operon</p> <p>DNA replication initiation in bacterial chromosomes and extrachromosomal genetic elements</p> <p>DNA replication initiation in eukaryotic cells</p> <p>Structure of Rep proteins</p> <p>Helicases - structure, the role in the process of DNA replication</p> <p>Primosom complex - synthesis of DNA replication starters</p> <p>RNA and DNA dependent polymerases - structure, properties, molecular basis of the synthesis of nuclear acids</p> <p>Structure of the E. coli Pol III holoenzyme complex</p> <p>Mechanism of synthesis of leading and lagging strands in prokaryotic and eukaryotic cells</p> <p>DNA repair - kinds of DNA repair, enzymes taking part in repair</p> <p>Topology and dynamics of chromosomes and extrachromosomal genetic elements</p> <p>Mobile genetic elements</p> <p>Molecular basis of transposition process</p>	
Bibliography of literature	
Genes VIII – by Benjamin Levin, Essential cell biology – by Bruce Alberts at all, Molecular Biology of the cell by Alberts at all.	
The learning outcomes (for the field of study and specialization)	Knowledge
K_W01 K_W03 K_U03	K_W01 Understands complex biological phenomena on the molecular level, knows their significance for biotechnology and their relationships with other areas and disciplines of science K_W03 Possesses knowledge in the field of selected issues currently discussed in biotechnological literature and problems concerning related scientific areas and disciplines significant for biotechnology
	Skills
	K_U03 Knows the English language to an extent that allows him/her to understand an utterance and read with understanding scientific literature and simple reviews in the fields of science and scientific disciplines connected with biotechnology; can prepare a short written review and an oral presentation in English, concerning particular issues of biotechnology and related scientific areas and disciplines.
Social competence	
Contact	
igor.konieczny@biotech.ug.edu.pl	