

COURSE OFFERED

Name of the course	Polish	Analiza ekspresji genów
	English	Gene expression analysis

1. LOCATION OF THE COURSE OF STUDY WITHIN THE EDUCATION SYSTEM

1.1. Section¹	Section of Exact and Natural Sciences
1.2. Discipline²	Biological Sciences
1.3. Type of education	Stationary
1.4. Level of education	Doctoral School
1.5. Person preparing the course description	Dr hab. Artur Kowalik, prof. UJK
1.6. Contact	artur.kowalik@ujk.edu.pl

2. GENERAL CHARACTERISTICS OF THE COURSE OF STUDY

2.1. Type of course³	disciplinary subjects in the sections
2.2. Language of the course	English

3. DETAILED CHARACTERISTICS OF THE COURSE OF STUDY

3.1. Type of classes⁴	lecture	
3.2. The number of hours⁵	15h	
3.3. Location of classes	Classes in the UJK teaching room	
3.4. Type of assessment	Graded credit	
3.5. Didactic methods	- lecture -working with the text - presentations	
3.6. Literature	basic	1.Berg JM, Stryer L, Tymoczko JL: Biochemistry 2024 2. Bruce Alberts, Karen Hopkin, Alexander Johnson, David Morgan, Keith Roberts, Peter Walter, Rebecca Heald Essential cell biology 2023
	supplementary	1. Terence A. Brown Genomes 2023 2. Robert A. Weinberg The Biology of Cancer, 3rd Edition, 2023 3. PubMed

¹ Section of Humanities:, Social Sciences, Section of Exact and Natural Sciences, Section of Medical and Health Sciences, Section of Arts.

² History,Linguistics, Literary Studies, Medical Sciences, Health Sciences, Political and Administrative Sciences, Legal Sciences, Security Sciences, Pedagogy, Communication and Media Studies, Management and Quality Studies, Biological Sciences, Chemical Sciences, Physical Sciences, Earth and related Environmental Sciences, Visual Arts and Artwork Conservation, Musical Arts.

³ General courses, domain specific subjects in the section, disciplinary subjects in the sections, specialized subjects in the discipline.

⁴ Classes, lecture, seminar.

⁵ Consistent with the education program at the Doctoral School
Jan Kochanowski University in Kielce.

4. OBJECTIVES, SYLLABUS CONTENT AND INTENDEND LEARNING OUTCOMES

4.1 Course objectives (including the form of classes)

C01 To become acquainted with knowledge concerning gene expression. To become familiar with the methodology of gene expression studies in Eukaryota and Prokaryotes.

C02 To be familiar with the research methodology concerning gene expression.

C03 To familiarise students with new ways of regulating gene expression i.e. gene silencing, gene therapy.

4.2 Syllabus content

Structure of DNA and its organisation in Bacteria and Eukaryotes

Structure of RNA, Partitioning of RNA molecules and regulation of gene expression. Translation. Methods for the study of expression. Genes (qPCR, ddPCR, RNA-Seq, Microarrays, Single-Cell-NGS, Spatial transcriptomics. Databases. Gene Therapy

1. SUBJECT LEARNING OUTCOMES

Learning outcomes	A doctoral student who has passed the subject:	Reference to the learning outcomes of Doctoral School (according to the training program at the Doctoral School)
in the area of KNOWLEDGE:		
W01	Has advanced knowledge of the regulation of gene expression	SD_W01
W02	Has advanced knowledge of developmental trends in gene expression research methods	SD_W02
W03	Formulates important current and unsolved problems in the study of gene expression	SD_W07
in the area of SKILLS:		
U01	Be able to define the purpose and focus of gene expression studies	SD_U01
U02	Be able to develop a research plan for gene expression studies and be able to select an appropriate gene expression research method for the chosen research problem	SD_U03
in the area of SOCIAL COMPETENCE:		
K01	Able to think entrepreneurially and act proactively	SD_K04

2. METHODS OF ASSESSMENT OF THE INTENDED LEARNING OUTCOMES

SUBJECT LEARNING OUTCOMES	METHOD OF ASSESSMENT (+/-)						
	Oral/written exam	Kolokwium	Project	activity in class	Own work	Group work	Others

	<i>The type of classes</i>			<i>The type of classes</i>			<i>The type of classes</i>			<i>The type of classes</i>			<i>The type of classes</i>			<i>The type of classes</i>			<i>The type of classes</i>		
	<i>L</i>	<i>C</i>	<i>S</i>	<i>L</i>	<i>C</i>	<i>S</i>	<i>L</i>	<i>C</i>	<i>S</i>	<i>L</i>	<i>C</i>	<i>S</i>	<i>L</i>	<i>C</i>	<i>S</i>	<i>L</i>	<i>C</i>	<i>S</i>	<i>L</i>	<i>C</i>	<i>S</i>
W01										+			+			+					
W02										+			+			+					
W03										+			+			+					
U01										+			+			+					
U02										+			+			+					
K01										+			+			+					

3. CRITERIA OF ASSESSMENT OF THE INTENDED LEARNING OUTCOMES

Form of classes	Grade	Criterion of assessment
Lecture (L) ⁶	3,0	51-60% obtained from own work, group work, activity in class.
	3,5	61-70% obtained from own work, group work, activity in class.
	4,0	71-80% obtained from own work, group work, activity in class.
	4,5	81-90% obtained from own work, group work, activity in class.
	5,0	91-100% obtained from own work, group work, activity in class.

Accepted for execution

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⁶ Niepotrzebne usunąć.