University of Gdańsk

Subject card

Subject name and code	Nukleic acids chemistry, PG_00080796						
Field of study	Chemical Business						
Date of commencement of studies	October 2024		Academic year of realisation of subject	2026/2027			
Education level	undergraduate studies		Subject group	Optional subject group			
Mode of study	full-time studies		Mode of delivery	at the university			
Year of study	3		Language of instruction	Polish			
Semester of study	5		ECTS credits	2.0			
Learning profile	academic		Assessment form				
Conducting unit	Faculty of Chemistry -> Rektor						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Piotr Mucha				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	30
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	30		5.0		15.0	50
Subject objectives	To familiarize students with all issues listed in the curriculum content of the lecture,to familiarize students with the nomenclature used in the chemistry of nucleic acids; to learn about their structure and function, and methods that make it possible to study their propertiesto familiarize students with the ways of storage and expression of genetic information in the cell and in selected v						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BCHINŻ_K02] Works individually demonstrating initiative and independence in actions, and effectively cooperates in a team, performing various roles in it.	Understands the need for the ability to work in a team by discussing and proposing their own solutions to the problem questions posed	[SK4] test/exam - oral or written
[BCHINŻ_K01] Identifies the level of her/his own knowledge and skills as well as the need to update engineering knowledge, continuous professional training and personal development.	Understands the need for continuous and systematic education	[SK4] test/exam - oral or written
[BCHINŻ_U08] Uses the chemical nomenclature and engineering terminology properly.	uses biochemical terminology to the extent necessary for the presentation of the curriculum content of the subject	[SU4] test/exam - oral or written
[BCHINŻ_W04] Describes the role of experiment and computer simulation in the design process of engineering issues.	knows the basics of physicochemical and theoretical methods to study the structure of nucleic acids	[SW4] test/exam - oral or written
[BCHINŻ_W02] Enumerates basic laws and theories in chemistry, physics and mathematics necessary to formulate and solve simple engineering tasks.	defines and characterizes the ways in which genetic information flows	[SW4] test/exam - oral or written
[BCHINŻ_U01] On the basis of the acquired knowledge, identifies, analyses and solves engineering tasks and problems in broadly understood chemistry.	is able to identify an appropriate method to study specific properties and structures of chemical compounds	[SU4] test/exam - oral or written

Subject contents

Structure of nucleosides and nucleotides, chemical structure and spatial structure of DNA and RNA, biosynthesis of nucleotides and nucleic acids, role of modified nucleotides, II-strand structures of RNA, protein motifs that recognize DNA and RNA, methods of studying the structure and properties of nucleic acids, functions of nucleic acids in the cell (replication, transcription, translation), structure and replication cycle of Ebola, SARS and HIV viruses, DNA and RNA in the replication cycle of HIV-1, catalytic activity of RNA, interactions of nucleic acids with bioligands

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
	50.0%	100.0%

Recommended reading

Basic literature	J.M. Berg, Stryer L., Tymoczko J. L., Biochemia , PWN, 2005,J.E. Krebs, Lewins Genes X, Jones & Bartlett Pub. 10 ed. 2009J.M. Coffin, Retroviruses, Cold Spring Harbor Lab. Press, 2002
Supplementary literature	L. Kłyszejko-Stefanowicz, Ćwiczenia z Biochemii M. Bryszewska, Biofizyka kwasów nukleinowych dla biologów, PWN, 2000
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

The genetic material of the HIV virus is:a. (+) ssRNAb. (-) ssRNAc. dsRNAd. (+) ssDNA

Work placement

Not applicable

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