University of Gdańsk

Subject card

Subject name and code	Genetic engineering and introduction to synthetic biology, PG_00063521		
Field of study	Genetics and Experimental Biology		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2024/2025
Education level	undergraduate studies	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	Katedra Genetyki Molekularnej Bakterii -> Faculty of Biology -> Rektor		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Marcin Łoś	
	Teachers	dr hab. Marcin Łoś	

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	0.0	0.0	30

Subject objectives	Students will learn theoretical basis of use of genetic engineering techniques and techniques of synthetic biology.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[GBEL3_K04] application of the principle of bioethics	Knowledge about multiple ethical aspects connected with use of genetic engineering	[SK2] presentation/project/paper/ report [SK5] implementation of a problem task
[GBEL3_K02] critically evaluate their own knowledge and methods in molecular biology and related fields and commercialise their research.	Ability to adjust methodology to solve the problem	[SK2] presentation/project/paper/ report [SK5] implementation of a problem task
[GBEL3_K01] use of theoretical knowledge in laboratory and production practice	Ability to plan the solution on the basis of genetic engineering methods	[SK2] presentation/project/paper/ report [SK5] implementation of a problem task
[GBEL3_U03] use research apparatus and tools and, following the correct sequence of operations, carry out simple physical, biological or chemical observations and measurements in laboratory work in the biological sciences	Theoretical basis of use of essential equipment	[SU2] presentation/project/paper/ report
[GBEL3_U02] use computer programmes for analysis and calculation, and use databases and bioinformatics tools to solve biological problems	Ability to plan cloning with minimal support of dedicated software	[SU2] presentation/project/paper/ report
[GBEL3_U01] independently perform practical tasks in the biological and related sciences, formulate research problems, analyse their results and draw conclusions.	Ability to plan basic cloning procedures	[SU2] presentation/project/paper/ report
[GBEL3_W06] the development and current state of knowledge and the latest trends in molecular genetics and related fields; indicates their relationship to other disciplines in the life sciences or medical sciences and their potential for use in practice	Understanding of the connection between natural biological processes and genetic engineering methods	[SW2] presentation/project/paper/ report
[GBEL3_W05] principles for planning research based on the achievements of biological sciences and related disciplines and the possibility of putting their results into practice, principles for the operation of equipment and apparatus used in molecular genetics research, and the principle of interpreting biological phenomena and processes based on empirical data in research work and practical action, taking into account the sustainable use of biodiversity	Theoretical basis to plan basic clonings	[SW2] presentation/project/paper/ report
[GBEL3_W04] knowledge applied to microbial and plant biotechnology	Konowledge of genetic engineering techniques and basis of synthetic biology	[SW2] presentation/project/paper/ report

Subject contents

Techniques of genetic engineering and synthetic biology

Prerequisites and co-requisites

Assessment methods and criteria

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

Recommended reading

Basic literature	An Introduction to Genetic Engineering
Supplementary literature	Genetic Engineering. Properties, Structures and Functions of DNA
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

Project of complex molecular cloning and estimation of procedure costs

Work placement

Not applicable

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