KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI
Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego
UNIA EUROPEJSKA
EUROPEJSKI FUNDUSZ SPOŁECZNY

Course title

Genetic Engineering

ECTS code

not defined

Name of unit administrating study

null

Studies

faculty	field of study		
Faculty of Biology	Medical Biology	type	first tier studies (BA), second tier studies (MA)
		form	full-time
		specialty	all
		specialization	all
Faculty of Biology	Biology	type	first tier studies (BA), second tier studies (MA)
		form	full-time
		specialty	all
		specialization	all
Faculty of Biology	Genetics and Experimental Biology	type	first tier studies (BA)
		form	full-time
		specialty	all
		specialization	all
Faculty of Biology	Natural Resources Conservation	type	first tier studies (BA)
		form	full-time
		specialty	all
		specialization	all

Teaching staff

dr inż. Karolina Stojowska-Swędrzyńska; dr hab. Wojciech Pokora, profesor uczelni

Forms of classes, the realization and number of hours

Forms of classes

Lecture

The realization of activities

classroom instruction

Number of hours

Lecture: 15 hours

ECTS credits

2

ESTIMATION OF WORKING TIME:

a) Classes requiring direct participation of the academic teacher and student:

- participation in lectures: 15 h
- participation in the written colloquium: 1 h
- participation in consultations: 9 h

b) Student's own work:

- preparation for discussion and problem solving: 5 h
- preparation for written colloquium, final assessment: 10 h.
- essay/project preparation: 10 h

TOTAL: 50 hours.

The academic cycle

2022/2023 summer semester

Type of course

an elective course

Language of instruction

english

Teaching methods

Conversational lecture with multimedia presentation, problem solving

Form and method of assessment and basic criteria for eveluation or examination requirements

Final evaluation

Graded credit

Assessment methods

-written colloquium: test questions and open-ended tasks problem solving (50%)
-essay/project (50%)

The basic criteria for evaluation

written colloquium comprises questions on lecture material and additional readings specified during the lecture series – minimum 51% of points from the final written test
essay/project (problem solving) – minimum 51% of points

Method of verifying required learning outcomes

Required courses and introductory requirements

A. Formal requirements

Courses containing the basics of molecular biology and microbiology

B. Prerequisites

knowledge about basic macromolecules as DNA, RNA, proteins (enzymes), their function and structure; basic knowledge about microorganisms as bacteria and yeast, their structure and growth conditions, basic knowledge about nucleic acid amplification techniques

Aims of education

The aim of the course is to provide students with the principles of the techniques, applications and possibilities of the various aspects of genetic engineering.

Course contents

the history of genetic engineering, its application in science, medicine, agriculture, food and pharmaceutical industry, economic aspects;
Basic tools (restriction enzymes, DNA ligase, DNA polymerases, plasmids, viruses, bacteria) and molecular techniques (restriction digestion, ligation, DNA amplification, cloning, transformation, transduction, conjugation) used in genetic engineering
the possibilities and limitations of the genetic engineering;
the structure of the laboratory, work principles, lab zones, basic equipment.
intellectual property and copyrights in genetic engineering

Bibliography of literature

Literature required to pass the course
Scientific articles (handed out during course)
Aurora, Mohan P. Genetic Engineering. Himalaya Publishing House 2008
Aurora, Mohan P. Genetic Engineering and Cloning. Himalaya Publishing House 2006

Extracurricular readings
Desmond S. T. Nicholl. An introduction to Genetic Engineering 3rd edition (2008) Cambridge University Press; 3 edition (June 23, 2008)
Brown. T. A. Gene cloning and DNA analysis. An introduction. 7th edition (2016) Wiley-Blackwell

The learning outcomes (for the field of study and specialization)

Knowledge

1. The student knows the structure and the function of basic macromolecules, molecular, possesses the knowledge about genetic manipulation and tools used in genetic engineering.
2. The student explains the theoretical basis of the methods and techniques used in genetic engineering
3. The student knows and understands the basic concepts and principles of industrial and intellectual property protection and copyright, can use patent information resources

Skills

4. The student can interpret the data obtained from different molecular methods used in genetic engineering, formulate correct conclusions
5. The student can read scientific papers about genetic engineering with understanding
6. The student can prepare a written presentation on a chosen topic in the field of genetic engineering

Social competence

7. The graduate is ready to use recognized sources of scientific and popular science information on genetic engineering in order to broaden their knowledge

8. The graduate is ready to systematically update biological knowledge in the field of genetic engineering and information about its practical applications

Contact

karolinastojowska@tlen.pl