



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Introduction to Genetics

Course

Field of study

InBioinformatics

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

1/1

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

Number of credit points

1

Lecturers

Responsible for the course/lecturer:

dr hab. inż. Agnieszka Rybarczyk

Responsible for the course/lecturer:

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tel: 616653029

wydział: Wydział Informatyki i Telekomunikacji

adres: ul. Piotrowo 3 60-965 Poznań

Prerequisites

A student beginning this course should understand the necessity of extending his/her competences. In addition, in terms of social competence the student must present such attitudes as honesty, responsibility, perseverance, cognitive curiosity, creativity, personal culture, respect for other people.

Course objective

The aim of the course is to provide students with the basic knowledge concerning molecular genetics, in particular: genetic concepts, molecular evolution and selected methods of genetic analysis. Additionally, introduce such elements as structure of genes, structure of genetic code, genetic material repair mechanisms and processes of replication, transcription and translation.



Course-related learning outcomes

Knowledge

1. The student knows and understands basic genetic concepts, mechanisms of inheritance and selected methods of genetic analysis.
2. Has a knowledge, with theoretical basis in prokaryotic and eukaryotic gene structure, genetic code structure, molecular evolution, genomics, genetic material repair processes, replication, transcription and translation processes.

Skills

Is able to retrieve and interpret the information from a variety of sources concerning scientific literature and the Internet and to express and justify clearly and extensively his/her opinions on a wide range of subjects related to molecular genetics.

Social competences

1. Exhibits a creative attitude in social and professional life.
2. Understands that in bioinformatics knowledge and skills become obsolete very quickly.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Forming evaluation

In lectures verifying established effects of the education is being carried out through: filing the written test with 5 questions / tasks to solve - every task 0-4 pt (tasks can consist of a few subsections - there is a then set fragmentary score for every subsection).

Programme content

The aim of the course is to present the basic issues concerning molecular genetics. The lectures will present basic concepts of classical genetics and methods of genetic analysis of higher organisms, bacteria and viruses. Then, the structure and role of DNA, mutations, DNA methylation, and the process of its replication, recombination and repair in prokaryotic and eukaryotic cells will be discussed, limited to the most essential information. The next step will be a discussion of the genetic code, as well as the structure of prokaryotic and eukaryotic genes, the processes of transcription and translation. Concepts of the fundamentals of genomics and the physical structure of genomes will be introduced, as well as DNA polymorphism and basic information on cell differentiation. The genetic basis of cancer will be briefly outlined. Topics will be illustrated with examples. An introduction to molecular evolution will also be presented, including concepts such as the origin of life on Earth or the genetic code.

Teaching methods

Lecture illustrated by a multimedia presentation enriched with numerous examples.

Bibliography



Basic

Węgleński P. (red): Genetyka molekularna, PWN, Warszawa, 2017

Additional

Winter et al.: Genetyka - krótkie wykłady, PWN, Warszawa, 2012

Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,0
Classes requiring direct contact with the teacher	15	0,5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	10	0,5

¹ delete or add other activities as appropriate