

COURSE SYLLABUS AND COURSE REQUIREMENTS

ACADEMIC YEAR 2023/2024 SEMESTER I.

<i>Course title</i>	<i>Molecular cell biology and biotechnology</i>
<i>Course Code</i>	MSM607ANEG
<i>Hours/Week: le/pr/lab</i>	1/3/0
<i>Credits</i>	4 le, 4 pr
<i>Degree Programme</i>	Msc.
<i>Study Mode</i>	
<i>Requirements</i>	Final exam
<i>Teaching Period</i>	autumn
<i>Prerequisites</i>	-
<i>Department(s)</i>	Department of Pharmaceutical Biotechnology
<i>Course Director</i>	Prof. Dr. Pongrácz Judit
<i>Teaching Staff</i>	Draskóczy Lilla Gréta

COURSE DESCRIPTION

A short description of the course (max. 10 sentences).

Neptun: [Instruction/Subjects/Subject Details/Basic data/Subject description](#)

The aim of the course is to provide an overview of prokaryotic and eukaryotic including human genetics and molecular biology techniques. In association with genetics mathematical background of data handling and statistical analysis will be introduced that is relevant to all types of biological research. The students will learn genetic modelling and manipulation systems, their relevance to human studies. Basic understanding of genomics and proteomics, biochemical processes will be linked to practical applications. To aid application of genetic principles in molecular biology, the course introduces students in the joint use of various softwares and mathematical algorithms to enable them to perform data processing and basic statistical analysis task in genetic and other routine biotech research work. During the course students will learn the mathematical background to statistics essential in biology based research. The study will include data handling using computer softwares, data analysis, interpretation, graphical presentation. The main statistical and probability methods used in medical and pharmaceutical research.

SYLLABUS

Neptun: [Instruction/Subjects/Subject Details/Syllabus](#)

1. GOALS AND OBJECTIVES

Goals, student learning outcome.

Neptun: [Instruction/Subjects/Subject Details/Syllabus/Goal of Instruction](#)

2. COURSE CONTENT

Neptun: [Instruction/Subjects/Subject Details/Syllabus/Subject content](#)

TOPICS

LECTURE	TOPICS
	1. Introduction
	2. Building blocks of cells
	3. Cell organelles
	4. Structure & function of DNA
	5. Chromosomes & genome
	6. DNA replication
	7. Transcription
	8. Translation
	9. Cell cycle & mitosis
	10. Meiosis & checkpoints
	11. Basic of genetics

PRACTICE

12. Recombinant DNA technology
13. Summary

1. Prokaryotes and eukaryotes comparison
2. The cell
3. Building blocks
4. Genetics
5. Cell division
6. Databases and primers
7. Cloning bacterial transformation
8. Selection of expression systems
9. Protein production and purification
10. Monoclonal AB
11. Phage display
12. Manipulation of cells

LABORATORY PRACTICE

1. -

DETAILED SYLLABUS AND COURSE SCHEDULE

ACADEMIC HOLIDAYS INCLUDED

LECTURE

<i>week</i>	Topic	Compulsory reading; page number (from ... to ...)	Required tasks (assignments, tests, etc.)	Completion date, due date
1.	Introduction
2.	Building blocks of cells			
3.	Cell organelles			
4.	Structure & function of DNA			
5.	Chromosomes & genome			
6.	DNA replication			
7.	Transcription			
8.	Translation			
9.	Cell cycle & mitosis			
10.	Meiosis & checkpoints			
11.	Basic of genetics			
12.	Recombinant DNA technology			
13.	Summary			

PRACTICE, LABORATORY PRACTICE

<i>week</i>	Topic	Compulsory reading; page number (from ... to ...)	Required tasks (assignments, tests, etc.)	Completion date, due date
1.	Prokaryotes and eukaryotes comparison			
2.	The cell			
3.	Building blocks			
4.	Genetics			
5.	Cell division			
6.	Databases and primers			
7.	Cloning bacterial transformation			
8.	Selection of expression systems			
9.	Protein production and purification			
10.	Monoclonal AB			
11.	Phage display			
12.	Manipulation of cells			
13.	Summary			

3. ASSESSMENT AND EVALUATION

(Neptun: Instruction/Subjects/Subject Details/Syllabus/Examination and Evaluation System)

ATTENDANCE

In accordance with the Code of Studies and Examinations of the University of Pécs, Article 45 (2) and Annex 9. (Article 3) a student may be refused a grade or qualification in the given full-time course if the number of class absences exceeds 30% of the contact hours stipulated in the course description.

Method for monitoring attendance (e.g.: attendance sheet / online test/ register, etc.)

Attendance sheet

ASSESSMENT

Cells of the appropriate type of requirement is to be filled out (course-units resulting in mid-term grade or examination). Cells of the other type can be deleted.

Course resulting in mid-term grade (PTE TVSz 40§(3))

Mid-term assessments, performance evaluation and their ratio in the final grade (The samples in the table to be deleted.)

Type	Assessment	Ratio in the final grade

Opportunity and procedure for re-takes (PTE TVSz 47§(4))

The specific regulations for improving grades and resitting tests must be read and applied according to the general Code of Studies and Examinations. E.g.: all tests and assessment tasks can be repeated/improved at least once every semester, and the tests and home assignments can be repeated/improved at least once in the first two weeks of the examination period.

Grade calculation as a percentage

based on the aggregate performance according to the following table

Course grade	Performance in %
excellent (5)	85 % ...
good (4)	70 % ... 85 %
satisfactory (3)	55 % ... 70 %
pass (2)	40 % ... 55 %
fail (1)	below 40 %

The lower limit given at each grade belongs to that grade.

Course-unit with final examination

Mid-term assessments, performance evaluation and their weighting as a pre-requisite for taking the final exam

(The samples in the table to be deleted.)

Type	Assessment	Weighting as a proportion of the pre-requisite for taking the exam
1. Drawing up a protocol		0%

Requirements for the end-of-semester signature

(Eg.: mid-term assessment of 40%)

Re-takes for the end-of-semester signature (PTE TVSz 50§(2))

The specific regulations for grade betterment and re-take must be read and applied according to the general Code of Studies and Examinations. E.g.: all the tests and the records to be submitted can be repeated/improved each at least once every semester, and the tests and home assignments can be repeated/improved at least once in the first two weeks of the examination period.

Type of examination (written, oral): written

The exam is successful if the result is minimum ... %. (The minimum cannot exceed 40%.)

Calculation of the grade (TVSz 47§ (3))

The mid-term performance accounts for ... %, the performance at the exam accounts for ... % in the calculation of the final grade.

Calculation of the final grade based on aggregate performance in percentage.

Course grade	Performance in %
excellent (5)	85 % ...
good (4)	70 % ... 85 %
satisfactory (3)	55 % ... 70 %
pass (2)	40 % ... 55 %
fail (1)	below 40 %

The lower limit given at each grade belongs to that grade.

4. SPECIFIED LITERATURE

In order of relevance. (In Neptun ES: Instruction/Subject/Subject details/Syllabus/Literature)

COMPULSORY READING AND AVAILABILITY

- [1.] Primary compulsory reading and its availability
- [2.] Compulsory literature and its availability

RECOMMENDED LITERATURE AND AVAILABILITY

- [3.]
- [4.]
- [5.]