

COURSE SYLLABUS AND COURSE REQUIREMENTS

ACADEMIC YEAR 2025/2026 SEMESTER I. (AUTUMN)

<i>Course title</i>	<i>Molecular cell biology and biotechnology</i>
<i>Course Code</i>	MSM607AN-EA-00, MSM607AN-GY-01
<i>Hours/Week: le/pr/lab</i>	1/3/0
<i>Credits</i>	4
<i>Degree Programme</i>	Biomedical engineering Msc.
<i>Study Mode</i>	
<i>Requirements</i>	Mid-term grade or 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 course provides comprehensive knowledge of the fundamentals of modern cell biology and its technological applications. Students will explore the molecular-level functioning of living cells, ranging from biological macromolecules to complex cellular processes and their biotechnological applications. In the first part of the course, we will cover biological macromolecules, viruses and prokaryotes, the structure of the eukaryotic cell, and the fundamental molecular processes occurring within eukaryotic cells in detail. In the second part of the course, students will become familiar with laboratory techniques and biotechnological methods.

SYLLABUS

Neptun: Instruction/Subjects/Subject Details/Syllabus

1. GOALS AND OBJECTIVES

Goals, student learning outcome.

Neptun: Instruction/Subjects/Subject Details/Syllabus/Goal of Instruction

The aim of the Molecular Cell Biology and Biotechnology course is to provide students with comprehensive knowledge of the molecular-level functions of cells, the mechanisms of fundamental cell biological processes, and their modern biotechnological applications.

2. COURSE CONTENT

Neptun: Instruction/Subjects/Subject Details/Syllabus/Subject content

TOPICS

LECTURE	TOPICS
	1. Introduction, The biological building blocks
	2. Viruses, prokaryotes, eukaryotes, eukaryotic cell
	3. Central dogma, codons, reading frame, transcription, translation
	4. DNA synthesis, cell cycle
	5. Chromosomes, mitosis, meiosis
	6. Mid-term test
	7. National Holiday
	8. Autumn Holiday
	9. MIK Partners Professional Day
	10. Biotechnology and laboratory techniques
	11. Biotechnology and laboratory techniques
	12. Biotechnology and laboratory techniques
	13. Biotechnology and laboratory techniques
	14. Final test

1. *Within the seminars, students complete written exercises based on the theoretical material presented in the lectures, through which they deepen and apply the knowledge they have acquired.*

DETAILED SYLLABUS AND COURSE SCHEDULE

ACADEMIC HOLIDAYS INCLUDED

LECTURE

week	Topic	Compulsory reading; page number (from ... to ...)	Required tasks (assignments, tests, etc.)	Completion date, due date
1.	
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				

PRACTICE, LABORATORY PRACTICE

week	Topic	Compulsory reading; page number (from ... to ...)	Required tasks (assignments, tests, etc.)	Completion date, due date
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				

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
1. Test		50%
2. Test		50%

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.

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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

Requirements for the end-of-semester signature

(E.g.: mid-term assessment of 40%)

70% attendance at the lecture and seminar

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 ... **40 %**. (The minimum cannot exceed 40%.)

Calculation of the grade (TVS_z 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.]