



DISCIPLINE GRID

1. Schedule data

1.1.	CAROL DAVILA UNIVERSITY OF MEDICINE AND PHARMACY
1.2.	GENERAL MEDICINE FACULTY
1.3.	2nd PRECLINICAL DPT - MORPHOLOGICAL SCIENCES
1.4.	DISCIPLINE Cell Biology, Molecular Biology and Histology
1.5.	STUDY DOMAIN: Health – within European Union
1.6.	STUDY LEVEL: License
1.7.	WORK PROGRAMME: MEDICINE

2. General information

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2.1.	Name: Cell Biology					
2.2	Subject code: DF I 5 S2M					
2.3	Type: DF					
2.4	Regime: DOB					
2.5.	Lecturers: 1. Dr. Gherghiceanu Mihaela - Professor 2. Dr. Enciu Ana Maria – associated prof. 3. Dr. Popa Maria Linda - Lecturer					
2.6.	Teaching assistants for practical lessons: 1. Dr. Enciu Ana Maria - associated prof. 2. Dr. Popa Maria Linda - Lecturer 3. Dr. Curici Antoanela - Lecturer 4. Dr. Fertig Emanuel - Lecturer 5. Dr. Pavelescu Luciana - Assistant professor 6. Dr. Pirvulet Viviana - assistant professor 7. Dr. Milanese Elena - assistant professor					
2.7. year	Study	I	2.8. Semester	I/II	2.9. Evaluation	E – lectures C- seminars

3. Estimated total time (hours/semester)

I. University training (teaching, practical application, evaluation)					
3.1Nr hours per week	4	out of which: 3.2 Lecture	2	3.3. Laboratory Session	2
3.4 Total hours out of learning schedule	56	out of which: 3.5 Lectures	28	Laboratory Sessions	28
Evaluation (no. hours)					
II Preparation/individual study					
Time distribution					Hours
Textbook study, lecture support, bibliography and notes					30
Supplementary documentation activity in the library, on online platforms					30
Practical activity support material, homework					10
Tutorial activity					40

Examinations		10
Other activities		4
3.7 Total hours of individual study		124
3.9 Total hours per semester (3.4+3.7)	180	
Credits	6	

4. Preconditions

4.1. curriculum	Not required
4.2. proficiencies	Not required

5. Conditions

5.1. for tutorial activity	Amphitheatre with video projection, sound system and internet access
5.2. for laboratory activity	Lab room equipped with light microscopes for didactic use

6. Learning outcomes

Knowledge	Skills	Responsability and autonomy
The student/graduate identifies, describes, and explains fundamental concepts regarding the characteristics of the normal human cell, at the structural and molecular level, as well as the principles of methods used to investigate biological functions.	The student/graduate correctly interprets and applies the fundamental concepts regarding the structure and functions of the human cell and the methods used to investigate biological functions.	The student/graduate integrates fundamental concepts and methods for investigating biological functions, formulates, and takes responsibility for well-founded conclusions regarding health or disease status.

7. Objectives (based on the grid of acquired specific skills)

7.1. General Objective	Objectives: Lectures target a good understanding of the cell organization and functioning at molecular level, as well as understanding that any imbalance could induce pathology. Understanding the cell as an integrative system with high ability to control, modulate and regulate any event as a response to environmental signals Tutorials (practical activities) will familiarize the students with the basic methods, techniques and equipment necessary in the cell investigations
7.2. Specific Objective	The professional training of the first-year student in the Cell and Molecular Biology Discipline aims to develop the students' abilities to understand the cellular and molecular mechanisms of the body's functioning, the way in which cells adapt to dynamic environmental conditions, the possible mechanisms of action of molecular therapies.

8. Content

8.1. Lectures (1st or 2nd semester)	Teaching method	Observations
1. Introduction on cell biology. General organization of a eukaryotic cell 2. Membrane organization 3. The nucleus I 4. The nucleus II	Lectures using Power-Point files and projector Permanently updated presentations for	Lectures in auditorium, or, under special circumstances, on-line,

5. Protein homeostasis 6. Membrane transport 7. Cell compartmentalization and vesicular traffic 8. Endoplasmic reticulum 9. The Golgi apparatus. Biogenesis and intracellular membrane traffic. Cell secretion 10. Mitochondria and cell energetics 11. Lysosomes and peroxisomes 12. Cytoskeleton and membrane specializations 13. Cell signaling 14. Cell cycle, cell differentiation and apoptosis	both courses and tutorials according to the cell biology knowledge development as shown in current textbooks, papers published in the field, verified information on the internet.	using the UMFCd e-learning platform
8.2. Laboratory Session (1st or 2nd semester)	Teaching method	Observations
1. Introduction to Cell Biology. Organizing the eukaryotic cell. 2. Methods of study of living cells, animal models, applications in medical practice 3. Light microscopy. 4. Electron microscopy. 5. Methods of study using antibodies - practical applications. 6. Methods of Study of Nucleic Acids. 7. Methods of study of proteins 8. Mid-term evaluation 9. Nucleus, cell cycle and programmed cell death. 10. Cell membrane and membrane-bounded organelles 11. Non-membrane bounded organelles: structure, ultrastructure, specific methods of study. 12. Cell membrane specializations. 13. Cell biology techniques – Q&A, problem solving. 14. Final assessment.	Powerpoint presentations, videos on principles and methods of cellular and molecular biology. Practical applications: use of light microscopes and microscopy slides interpretation.	Activity in destined rooms with appropriate equipment.

Bibliography

1. **Lecture and seminar notes, posted on the Classroom**
2. **Essential Cell Biology.** Bruce Alberts, Karen Hopkin, Alexander D Johnson, David Morgan, Martin Raff, Keith Roberts, Peter Walter. 5th edition. WW Norton, 2019. ISBN13: 9780393680362
3. **Ross Histology: tratat and atlas. Corelații din biologia moleculară și celulară.** Wojciech Pawlina, 7th Edition (chapters 1-3)

9. Evaluation

Activity type	9.1. Evaluation Criteria	9.2 Methods of evaluation	9.3 % out of final grade
9.4 Lectures	A. Knowledge for mark 5: 1. To know basal organization of a eukaryotic cell (structural and ultrastructural level) 2. Essential knowledge of cell membrane and organelles functions (enumeration) 3. Central Dogma of Cell Biology – significance, description of mechanism 4. Other basic knowledge notions highlighted in the teaching materials and on the Classroom B. Additional knowledge for mark 10:	Final exam – written or oral	70%

	1. To know details on the molecular organization of structural and ultrastructural elements of a cell (membrane, organelles) 2. To know details on the molecular mechanisms occurring in a cell (at membrane level, and organelles), and how these mechanisms are integrated as biological events.		
9.5 Laboratory Session	A. Knowledge for mark 5: 1. Efficient use of the light microscope 2. To know different microscope types and their usefulness in cell investigation 3. To know the results of hematoxylin-eosin staining 4. To identify the cell nuclei in various standard staining methods and to know the significance of nucleus shape and location in a slide 5. Cell types – classification methods 6. Main components of the cell 7. Other basic knowledge notions highlighted in the teaching materials and on the Classroom B. Additional knowledge for mark 10 1. To recognize results of histochemical and cytochemical staining 2. To point out the rational and usefulness of various methods and techniques used in the cell investigation 3. To recognize various cellular ultrastructure in electron micrographs	Oral examination/ written exam/single choice questions	15% - practical exam
9.5.1	Teaching assistant examination	Direct examination, topic presentation (oral), written evaluation	15%
9.6. Minimum performance standards The passing mark is 5 for each evaluation . Practical exam is eliminatory. Attendance is mandatory in order to make the lecture exam. The lecture exam is passed if basic knowledge is demonstrated for each subject in oral evaluation or 27 questions out of 60 were correctly answered in the written exam. The final grade is calculated based on the formula: $0.7 \times \text{lecture exam} + 0.15 \times \text{practical exam} + 0.15 \times \text{TA assessment}$. The formula applies only if grade 5 was obtained for each component of the evaluation. Grade 4 or less for each of these evaluations automatically fails the student in Cell Biology. The result is communicated after the examination for oral exams and in 3 working days for written exams.			

Date 18.09.2025

Signature lecturers

Signature seminar
teaching assistants

Signature of the department director