DISCIPLINE SHEET

1.-Info about the program

FOUNDATION FOR DEVELOPMENT AND MANAGEMENT		
1.2-Faculty	FACULTY OF MEDICINE	
1.3-Departament	Preclinical/Fundamental Disciplines	
1.4-Study domain	Health	
1.5-Study cycle	Bachelor	
1.6-Study program/ Calification	Medicine-English	

2.-Info about discipline

2.1- Name of the discipline					CELLULAR AND MOLECULAR BIOLOGY			
2.2-Course lecturer					Assoc. Prof. Dr. **DARABÃ Oana**, MD, PhD			
2.3-Seminary lecturer					Assoc. Prof. Dr. **DARABÃ Oana**, MD, PhD			
2.4-Year of study	I	2.5 Semester	II	2.6 Evaluation type	Exam	2.7. Discipline regime	Content	DF
							Mandatory	DOB

3. -Total time (hours of didactic activity per semester)

3.1-Number of hours per week	4	3.2 -course	2	3.3- laboratory	2
3.4-Total hours of the curriculum	56	3.5 -course	28	3.6 -laboratory	28

Distribution of time	Hours
Study after manual, course support, bibliography and notes	25
Additional documentatin in the library, on the specialized electronic platforms and on the field	10
Training seminars/laboratories/projects, themes, papers,portofolios and essays	5
Tutoring	2
Examination	2
Other activities	-

3.7-Individual study hours	44
3.8-Total hours per semester	100
3.9-Credit number	4

4.-Preconditions (if applicable)

4.1.-Curriculum	Knowledge of biology and physiology according to the admission syllabus
4.2.-Learning Outcomes	-

5.-Conditions (where applicable)

5.1. -Course Conduct	-Projector

5.2.-conducting the seminar/laboratory	-white coats -laboratory equipment, laboratory guide

6. Learning outcomes

Knowledge	Identifies, describes and explains fundamental notions regarding the characteristics of the healthy human body, structural (anatomical, histological, cellular and molecular) and functional (physiological, biochemical, biophysical) as well as the principles of methods for investigating biological functions
Skills	Correctly interpret and apply the fundamental notions regarding the structure and functions of the human body and the methods of investigating functions
Responsibilities and autonomy	Integrates fundamental notions and methods of investigating biological functions, formulates and assumes reasoned conclusions regarding the state of health or disease.

7.-Objectives of the discipline (resulting from the grid of specific skills accumulated)

7.1 -General objective of the discipline	The basic concepts of general biology
7.2- Specific objectives	-Knowledge and understanding of elementary notions of general biology -Critical analysis of various hypotheses that support the explanation of biological phenomena -Use of bibliographic sources -Creating power point reports/presentations

8.-Contents

8. 1-Course (homework, number of hours, bibliography)	hours / week	Teaching methods

1.-Origin of Life. Organization of Living Systems (1): Origin of Life.	2	Active and Interactive Video Projection
2.-Organization of Living Systems (2).	2	Active and Interactive Video Projection
3.-Cellular Homeostasis: Exchanges through Biological Membranes.	2	Active and Interactive Video Projection
4.-Cancer Biology.	2	Active and Interactive Video Projection
5.-Cellular Bioenergetics.	2	Active and Interactive Video Projection
6.-Basic Concepts of Radiobiology.	2	Active and Interactive Video Projection
7.-Modern Techniques Used in Medicine.	2	Active and Interactive Video Projection
8.-Elements of Molecular Biology: PCR Technique.	2	Active and Interactive Video Projection
9.-Elements of Molecular Biology: Epigenetic Mechanisms.	2	Active and Interactive Video Projection
10.-Concepts of Evolutionary Medicine (1).	2	Active and Interactive Video Projection
11.-Concepts of Evolutionary Medicine (2). Concepts of Environmental Medicine and Ecology.	2	Active and Interactive Video Projection
12.-Medical Geology: The Role of Geological Factors in Human Pathology.	2	Active and Interactive Video Projection
13.-Biology of Aging	2	Active and Interactive Video Projection
14.-Biology and Medicine of the Future.	2	Active and Interactive Video Projection

Mandatory Bibliography:

1. Alberts B., Hopkin K., Johnson A., Morgan D., Raff M., Roberts, Walter, Romanian edition coordinators - Hinescu M., Cotrutz Carmen Elena, Mihai Ioana, Horea Matei, Sin Anca, Verdeș Doina, 2022: *Cell and Molecular Biology*, 5th edition, Ed. Hipocrate.
2. Cadar M. E., 2016: *Cell Biology*, Ed. AcademicPres, Cluj-Napoca.
3. Chaitanya, K.V., 2013: *Cell and Molecular Biology, A Lab Manual*, Ed. Delhi: PHI Learning Private Limited, 144 pp.
4. Clark D. P., Pazdernik N.J., McGehee M. R., 2019: *Molecular Biology*, Third edition, Ed. Elsevier, Academic Press, 1001 pp.
5. Curticăpean Manuela, 2016: *Molecular Biology and Genetics Techniques*, Ed. University Press, Târgu-Mureș.

Optional Bibliography:

1. Cadar M. E., 2013: *The Living Cell*, 2nd revised edition, Edit. AcademicPres, Cluj-Napoca.
2. Leabu M., Nechifor M. T., 2014: *Biomembranes: Unity in Diversity*, Ed. Medicală Almatea.
3. Gartner Leslie, 2018: *Cell Biology and Histology*.
4. Iwasa J., Marshall W., 2016: *Karp's Cell and Molecular Biology: Concepts and Experiments*, Eighth edition, USA.
5. Lodish H., Berk A., Kaiser C. A., Krieger M., Bretscher A., Ploegh H., Amon A., Martin K. C., 2016: *Molecular Cell Biology*, Eighth edition, W.H. Freeman Company, New York, 1170 pp.
6. Plopper G., 2020: *Principles of Cell Biology*, Ed. Jones & Bartlett Pub Inc, 744 pp.

Sin Anca et al., 2015: *Cell and Molecular Biology*, University Press, Târgu-Mureș

8. 2- Laboratory (themes, number of hours, bibliography	hours /week	Teaching methods
1.-Introduction to Cell Biology. Organization of the Eukaryotic Cell	2	·Interactive lecture ·Practical demonstrations ·Bulletin interpretations solving
2.-Optical Microscopy	2	
3.-Electron Microscopy	2	
4.-Cell Membrane and Organelles Delimited by Endomembrane: Structure, Ultrastructure, Specific Methods of Study	2	
5.-Endomembrane Organelles: Structure, Ultrastructure, Specific Methods of Study	2	
6.-Nucleus, Cell Cycle, and Programmed Cell Death	2	
7.-Biochemical and Molecular Biology Methods Used in Cell Study – General Principles	2	
8.-Methods for Studying Nucleic Acids	2	
9.-Methods for Studying Proteins	2	
10.-Antibody-Based Study Methods – Practical Applications	2	
11.-Methods for Studying Live Cells, Animal Models, Applications in Medical Practice	2	
12.-Determination of Growth Curve and Main Parameters of a Cell Culture	2	
13.-Indirect Determination of Cell Number in a Suspension by Spectrophotometric Calibration	2	
14.-Cell Cycle: Phases and Regulation. Apoptosis	2	
11-12.-Morphopathology of the female genital tract Cervical carcinoma.Carcinoma of the uterine body.Carcinoma of the mammary gland.	2	
13-14.-ANATOMO-CLINICAL NECROPSY	2	

Mandatory Bibliography:

1.-Alberts B., Hopkin K., Johnson A., Morgan D., Raff M., Roberts, Walter, Romanian edition coordinators - Hinescu M., Cotrutz Carmen Elena, Mihai Ioana, Horea Matei, Sin Anca, Verdeș Doina, 2022: *Cell and Molecular Biology*, 5th edition, Ed. Hipocrate.

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10.-Lodish H., Berk A., Kaiser C. A., Krieger M., Bretscher A., Ploegh H., Amon A., Martin K. C., 2016: *Molecular Cell Biology*, Eighth edition, W.H. Freeman Company, New York, 1170 pp.

11.-Plopper G., 2020: *Principles of Cell Biology*, Ed. Jones & Bartlett Pub Inc, 744 pp.

12.-Sin Anca et al., 2015: *Cell and Molecular Biology*, University Press, Târgu-Mureș

9.-Corroborating/validating the contents of the discipline with the expectations of the representatives of the epistemic community, professional associations and employers representative of the field related to the program

The contents of the discipline are in accordance with the RNCIS standards.

10.-Evaluation

Activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 % of the final grade

10.4 Course	*Knowledge for Note 5:* Exam – test grid with 50 questions; Knowledge for grade 5: Correct answer to 50% of questions Knowledge for Note 10: Knowledge for grade 10: Correct answer to 100% of questions	*Final assessment*: Grid test with 50 questions 100%; Interactivity during the teaching process	90% 10%

10.6 Minimum performance standard
Course – Knowledge of the Following Topics: Extracellular Matrix Cell Motility The Nucleus During Cell Division Ribosomes Mitochondria Control of Cell Proliferation and Differentiation Laboratory – Knowledge of the Following Techniques: Technique for Preparing an Instant Microscopic Slide Technique for Spreading Biological Material in a Monolayer Technique for Organ Imprints Methods for Separating Cellular Components Methods for Studying Intracellular Organelles Modern Techniques in Cell and Molecular Biology

Date: 28.04.2025	Signature of the discipline coordinator: Assoc. Prof. Dr. **DARABÃ Oana**, MD, PhD	Holder of the seminar activities: Assoc. Prof. Dr. **DARABÃ Oana**, MD, PhD
Date of approval in the Department		
Signature of the Director of Department		

Reprezentant legal F.D.M.
Presedinte
Prof. Univ. Dr. POSTĂVARU Nicolae