

SYLLABUS

Histopathology and cellular pathology

University year: 2025-2026

1. Information regarding the programme

1.1. Higher education institution	Babeş-Bolyai University
1.2. Faculty	Biology and Geology
1.3. Department	Molecular Biology and Biotechnology
1.4. Field of study	Biology
1.5. Study cycle	Master, 2 years (4 semesters)
1.6. Study programme/Qualification	Medical Biology
1.7. Form of education	Full-time education

2. Information regarding the discipline

2.1. Name of the discipline		Histopathology and cellular pathology					Discipline code		BME4301		
2.2. Course coordinator					Alexandra Ciorîță						
2.3. Seminar coordinator					Alexandra Ciorîță						
2.4. Year of study		2	2.5. Semester		3	2.6. Type of evaluation		E	2.7. Discipline regime		DA

3. Total estimated time (hours/semester of didactic activities)

3.1. Hours per week	4	of which: 3.2 course	2	3.3 seminar/laboratory	2
3.4. Total hours in the curriculum	56	of which: 3.5 course	28	3.6 seminar/laborator	28
Time allotment for individual study (ID) and self-study activities (SA)					hours
3.5.1. Learning using manual, course support, bibliography, course notes (SA)	40				
3.5.2. Additional documentation (in libraries, on electronic platforms, field documentation)	10				
3.5.3. Preparation for seminars/labs, homework, papers, portfolios and essays	12				
3.5.4. Tutorship	4				
3.5.5. Evaluations	4				
3.5.6. Other activities: Thematics					
3.7. Total individual study hours	70				
3.8. Total hours per semester	126				
3.9. Number of ECTS credits	5				

4. Prerequisites (if necessary)

4.1. curriculum	General cytology, General Histology, Biochemistry, General chemistry, Cellular and Molecular Biology
4.2. competencies	<ul style="list-style-type: none"> • Light microscopy • Concentrations • Scientific papers • Electronic platforms (Socrative, Mentimeter etc.) • Lab equipment

5. Conditions (if necessary)

5.1. for the course	Logistic video support Electronic support BBU libraries
5.2. for the seminar /lab activities	Minimum 80% attending at the practical courses will ensure the participation to the exam

6. Specific competencies acquired ¹

Professional/essential competencies	<ul style="list-style-type: none"> • Development of knowledge associated with pathological conditions at the cellular and tissue level • Establishing the risks that may occur in the human body in case of a pathological condition • Examination and correct identification of histopathological conditions • Conceiving the experimental design, obtaining measurement data, analyzing/interpreting them and formulating conclusions
Transversal competencies	<ul style="list-style-type: none"> • Accomplishing the transfer of information, taking and using for the understanding of cell cultures knowledge from related fields: general cytology, histology, animal physiology, biochemistry (metabolism), and genetics • Using already known notions in new contexts • The use of theoretical notions in solving practical problems • Developing the ability to work in a team

7. Objectives of the discipline (outcome of the acquired competencies)

7.1 General objective of the discipline	<ul style="list-style-type: none"> • Knowledge of the general principles of cell pathology and histopathology
7.2 Specific objective of the discipline	<ul style="list-style-type: none"> • Acquiring the necessary/complementary information to assimilate the content of the subjects of general cytology, histology, biochemistry, animal physiology • Introduction to the techniques of obtaining and interpreting histological samples • Presentation of concepts and technologies for obtaining histopathological samples at different levels • Development of the capacity for analysis and synthesis, the capacity to design and carry out experiments

8. Content

8.1 Course	Teaching methods	Remarks
1. Introduction to cytology and animal histology	Frontal lectures, team discussions, debates, didactic games, case studies, viewing educational videos	
2. Introduction to cellular pathology and histopathology		
3. Circulatory disorders: edema, hyperemia and congestion, hemorrhage, hemostasis, thromboembolism, infarction, shock notions		
4. Inflammation: generalities, acute inflammation, chronic inflammation. Healing processes		
5. Adaptive metabolic disorders: atrophy, hypertrophy, hyperplasia, metaplasia		
6. Reversible and irreversible cell affections: necrosis and apoptosis		
7. Implementation of acquired notions in the biomedical environment		
8. Neoplasms: generalities and carcinogenesis		
9. Classification of tumors. Tumor grading criteria		
10. Tumor serology - tumor markers		
11. Macroscopy and microscopy of tumors. Metastasis process		
12. Biomedicine – the utility of acquired knowledge for medical applications		
13. Nanomaterials science – biocompatibility and biofunctionalization		

¹ One can choose either competences or learning outcomes, or both. If only one option is chosen, the row related to the other option will be deleted, and the kept one will be numbered 6.

14. Applicability of the discipline to the labor market		
Bibliography 1. Mills S. Histology for Pathologists, Lippincott and Williams, 3rd Ed., 2007 2. ***Tehnici de lucru pentru prelucrare și colorare a preparatelor de histopatologie – Suport de curs 3. Kumar V., Abbas A., Aster J. Pathologic basis of disease, Elsevier Saunders, 2014 4. Suport de curs Histopatologie Optional references 1. Mescher A, Junqueira's Basic Histology Text and Atlas, 14th Ed. McGraw Hall India, 2016. 2. Ross MH, Pawlina W. Histology A Text and Atlas With Correlated Cell and Molecular Biology, 7th ed. Wolters Kluwer. 2015 3. Alberts B, Johnson A, Lewis J, Raff M, Roberts K, Walter P. Molecular Biology of the Cell, 6th Ed. Garland Publishing, New York, 2014. 4. Alberts B, Johnson A, Lewis J, Raff M, Roberts K, Walter P, Molecular Biology of the Cell, 5th Ed. Garland Publishing, New York, 2008. 5. Alberts B, Johnson A, Lewis J, Raff M, Roberts K, Walter P. Molecular Biology of the Cell, 4th ed., Garland Publishing, New York, 2002. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Books 6. Brady ST, Siegel GJ, Albers RW, Price DL. Principles of Molecular, Cellular, and Medical Neurobiology, 8th Edition, Academic Press, 2011. 7. Dashek WV, Harrison M. Plant Cell Biology, 1st Edition, CRC Press. 2010. 8. Hunt T, Wilson J, The Problems Book: for Molecular Biology of the Cell, 6th Edition, Garland Science, 2015. 9. Kuehnelt W, Color Atlas of Cytology, Histology, and Microscopic Anatomy, 4th Edition, 2003. 10. Lodish H, Berk A, Kaiser CA, Krieger M., Scott MP, Bretscher A, Ploegh H, Matsudaira P, Molecular Cell Biology, 6th Edition, 2007. 11. Lodish H, Berk A, Kaiser CA, Krieger M, Bretscher A, Ploegh H, Amon A, Martin KC, Molecular Cell Biology, 8th Edition, 2014		
8.2 Seminar / laboratory	Teaching methods	Remarks
1. Presentation of the way of carrying out the works; establishing work pairs and establishing the order of rotation; laboratory protection norms and PSI norms.	Frontal lecture	
2. Recognition of the main organs and tissues on histological criteria	Practical activity, subgroups of 2-3 students	
3. Edema, hyperemia and congestion		
4. Myocardial infarction - stages, healing, consequences		
5. Acute and chronic inflammation. Tuberculosis. Meningitis. Pneumonia		
6. Cerebral necrosis		
7. Cerebral atrophy. Hypertrophy of the muscle layer at the level of the digestive tube. Metaplasia of the pulmonary bronchial epithelium		
8. Basal cell carcinoma. Squamous cell carcinoma		
9. pTNM staging exemplified by colon adenocarcinoma		
10. Carrying out an individual study. Analysis, synthesis and integration activities of a scientific text of your choice	Individual practical activity, confrontation of ideas, debate, argumentation - group activity	
11. Carrying out an individual study. Analysis, synthesis and integration activities of a scientific text of your choice		
12. Carrying out an individual study. Analysis, synthesis and integration activities of a scientific text of your choice		
13. Carrying out an individual study. Analysis, synthesis and integration activities of a scientific text of your choice.		
14. Evaluation (examination) of laboratory work		Practical examination
Bibliography Collection of reports for each laboratory work available at the department's library and online on the specialization's working group		

9. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

- The course has a similar content to the courses in other European universities and takes into account the level of preparation of the students
- The course is fundamental for the development of working skills in various laboratories, but in which modern methods of investigating life, at the cellular and molecular level, are applied.

10. Evaluation

Activity type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percentage of final grade
10.4 Course	Assimilation of informational content	Written exam	70%
	Enabling the use of concepts/notions		
10.5 Seminar/laboratory	Skills to work in the laboratory and to apply an experimental protocol	Practical evaluation at the end of the semester	30%
	<ul style="list-style-type: none">• Skills of analysis, synthesis and integration of a scientific text		
10.6 Minimum standard of performance			
<ul style="list-style-type: none">• Knowing at least 70% of the information contained in the course• Knowledge of at least 30% of the laboratory information			

11. Labels ODD (Sustainable Development Goals)²

	
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Date:
09.12.2024

Signature of course coordinator
Şef lucr. dr. Alexandra Ciorîţă

Signature of seminar coordinator
Şef lucr. dr. Alexandra Ciorîţă

Date of approval:
09.12.2024

Signature of the head of department
Conf. dr. Beatrice Kelemen

² Keep only the labels that, according to the [Procedure for applying ODD labels in the academic process](#), suit the discipline and delete the others, including the general one for *Sustainable Development* – if not applicable. If no label describes the discipline, delete them all and write „Not applicable.”.