

CHART OF DISCIPLINE/ SYLLABUS

1. Study Program Data

1.1 Higher Education Institution	"VICTOR BABEȘ" UNIVERSITY OF MEDICINE AND PHARMACY TIMIȘOARA
1.2 Faculty	MEDICINE
1.3 Department	II – Microscopic morphology
1.4 Study Domain	HEALTH
1.5 Study Cycle	LICENCE
1.6 Study programme/ Qualification	MEDICINE/MEDICAL DOCTOR

2. Discipline Data

2.1. Discipline name	Practical clinical immunomorphology						
2.2 Course tutor(s)							
2.3 Practical activity tutor(s)							
2.4 Year of study	III	2.5 Semester	I	2.6. Assesment type	Colloquium	2.7 Discipline rank	Content ¹⁾ DS
							Mandatory /Compulsory ²⁾ DOP

3. Duration/Estimated Time (number of hours/semester of teaching activity)

3.1 Number of hours/ week	2	3.2 lecture/course ³	1	3.3 laboratory ⁴	1
3.4 Total hours of curriculum	28	3.5 lecture/course ⁵	14	3.6 laboratory ⁶	14
Time distribution for educational activities					hours
Study support- manuals, lectures, references and notes ⁷					15
Additional documentation – library, dedicated platforms from domain ⁷					10
Documentation for seminars/ practical activity/ projects, themes, portofolios and essays ⁷					5
Tutorship ⁷					
Assessment ⁷					2
Other activities ⁷					
3.7 Total number of hours for individual study ⁷	32				
3.8 Total number of hours per semester	1 credit = 30 ore 2 x 30 = 60				
3.9 Number of credits ⁸⁾	2				

4. Preconditions (if applicable and requested)

4.1 of curriculum	HISTOLOGY
4.2 of competence	-

5. Conditions (if applicable and requested)

5.1 for courses	Mandatory attendance for up to 50% of total number of lectures No audio or video-recording of the lectures without permission Academic behaviour of students and academic staff Interactive learning methods, with active participation of the students to teaching process Use of lectures content limited to the students enrolled in academic year 2024-2025 Lectures content dissemination forbidden without permission given by the lecture tutor
5.2 for laboratories/practical activities	Face-to-face using: computer, whiteboard, the Desk Panoramic Scanner (3D Histech, Budapest, Hungary), the Panoramic Viewer system and the virtual slice library of the Department of Histology. Attendance at the laboratory is required, with a maximum of 85% of all absences being accepted

6. Specific competencies and skills

Professional Competencies	<ol style="list-style-type: none"> 1. Histology and immunomorphology terms and basic notions, general principles of immunohistochemical technique. 2. The ability to identify morphologic, and immunohistochemical stainings. 3. Clinical implications of the immunohistochemical technique. 4. Application of accumulated skills as the principal basis to promote the exam.
Transversal Competencies	<ol style="list-style-type: none"> 1. Interest for professional development by engaging critical thinking skills demonstrated through active participation in the lecture and practical work/laboratory; 2. Involvement in scientific research activities by participating in the elaboration of papers, studies, specialized articles; 3. Effective use of information sources and communication resources and assisted training (Internet portals, specialized software applications, databases, on-line courses, etc.) in an international language.

7. Discipline/Course objectives (based on the specific competences)

7.1 Discipline/Course general objectives	The accumulation of histologic and immunohistochemical terms and notions as useful tools to promote the mandatory exam and the use of knowledge specified in the the scale correction for future clinical practice.
7.2 Discipline/Course specific objectives	Examination of immunohistochemical slides. Immunohistochemical staining methods. Normal immunomorphology of main tissues.

8. Learning results

Completing the course "Practical Clinical Immunomorphology" leads to the acquisition of a complex set of competencies, including thorough knowledge of the principles, techniques, and immunohistochemical markers used in histopathological diagnosis, as well as the practical skills necessary for the correct application of immunohistochemical methods and interpretation of the results obtained.

Furthermore, the student develops responsibility and autonomy in conducting laboratory activities, while adhering to ethical standards and good practice guidelines, as well as the ability to collaborate effectively within a team. These outcomes enable the integration and application of acquired knowledge in both clinical and research contexts, thereby fostering a professional attitude and an active contribution to the diagnostic process.

Knowledge	<p>The student:</p> <p>Recognizes, describes, and explains the principles of immunohistochemistry and the use of tissue markers in diagnosis.</p> <p>Lists and classifies the fundamental markers of epithelial, connective, muscular, and nervous tissues.</p> <p>Explains the relationship between the immunohistochemical reaction and the molecular structure of the antigen.</p> <p>Distinguishes between direct and indirect immunohistochemical staining methods.</p>
Skills	<p>The student:</p> <p>Applies immunohistochemical techniques appropriately in the analysis of histological slides.</p> <p>Identifies and interprets positive and negative reactions in immunohistochemical preparations.</p> <p>Critically analyzes the results and formulates diagnostic conclusions based on the markers used.</p> <p>Integrates theoretical knowledge into practical work and scientific research.</p>
Responsibility and autonomy	<p>The student:</p> <p>Demonstrates autonomy and responsibility in the analysis of slides and interpretation of data.</p> <p>Adheres to good practice standards and the ethical principles of laboratory work.</p> <p>Actively collaborates with peers and faculty in analysis and evaluation activities.</p> <ul style="list-style-type: none"> • Shows openness to new technologies and immunohistochemical methods.

9. Content

9.1. Teaching methods	
Interactive lectures, with a focus on conceptual understanding and clinical exemplification	
Discovery-based learning and case analysis, enabling the correlation of theory with practice	
Digitally assisted practical demonstrations, using virtual immunohistochemical slides	
Collaborative learning, through teamwork and guided discussions	
Self-assessment and formative feedback, to strengthen professional and attitudinal competencies	
9.2 Course	Number of hours
1. Basic principles of immunohistochemistry. Clinical applications in the pathological diagnosis	1
2. The immunohistochemical techniques: how to handle the specimen, primary processing and basic steps	1
3. Cytokeratins as markers of epithelial differentiation. Practical identification of covering and glandular epithelial tissues.	1
4. Specific markers of non-epithelial cells included in epithelia	1
5. Immunomorphological characters of the components of connective tissues	1
6. Immunomorphology of the adipose tissue	1
7. Immunohistochemistry of specialized connective tissues: cartilage and bone	1
8. The expression of specific markers of the striated muscle tissues	1
9. The immunohistochemical phenotype of the smooth muscle tissue	1
10. Immunohistochemical markers of the neurons and supporting cells in the nervous tissue	1
11. Bone marrow and blood: the practical application of immunocytochemical methods and their involvement in the diagnosis	1
12. Integrating tissue marker to characterize normal cells.	1
13. Integrating immunohistochemical methods to improve the pathological diagnosis	1
14. Immunohistochemical markers as guide of anticancer therapy	1

Mandatory references:
1. Lecture – electronic format, PowerPoint presentations, Moodle platform, updated
Optional references:
1. Histology for Pathologists by Stacey E. Mills, 2019.

9.3 Seminars/ Laboratory /practical activity/ projects	Teaching-learning methods	Number of hours	Practical activity done by the students
1. Basic principles of immunohistochemistry. Clinical applications in the pathological diagnosis. Presentation of the immunohistochemical laboratory.	Interactive lecture, debate, case presentations, microscopic analysis and observations, practical demonstrations, collaborative learning, digitally assisted individual study, guided discussions.	1	Microscopy and analysis of immunohistochemical slides, identification of specific markers, interpretation of positive/negative reactions, and correlation with clinical diagnosis.
2. The immunohistochemical techniques: how to handle the specimen, primary processing and basic steps. How to work in the immunohistochemical laboratory.		1	
3. Cytokeratins as markers of epithelial differentiation. Practical identification of covering and glandular epithelial tissues. Case presentation. Principal markers of diagnostic for carcinoma.		1	
4. Specific markers of non-epithelial cells included in epithelia. Case presentation. Principal markers of diagnostic for adenocarcinoma.		1	
5. Immunomorphological characters of the components of connective tissues. Case presentation. Principal markers of diagnostic for lymphoma.		1	
6. Immunomorphology of the adipose tissue		1	
7. Immunohistochemistry of specialized connective tissues: cartilage and bone. Case presentation. Principal markers for Ewing sarcoma.		1	
8. The expression of specific markers of the striated muscle tissues. Case presentation		1	
9. The immunohistochemical phenotype of the smooth muscle tissue. Case presentation		1	
10. Immunohistochemical markers of the neurons and		1	

supporting cells in the nervous tissue. Case presentation			
11. Bone marrow and blood: the practical application of immunocytochemical methods and their involvement in the diagnosis. Case presentation		1	
12. Integrating tissue marker to characterize normal cells.		1	
13. Integrating immunohistochemical methods to improve the pathological diagnosis. Molecular basis of angiogenesis and therapeutical implications.		1	
14. Immunohistochemical of general markers and markers of lymphangiogenesis as guide of anticancer therapy		1	
Mandatory references: 1. Practical activity – electronic format, PowerPoint presentations, Moodle platform, updated Optional references: 1. Histology for Pathologists by Stacey E. Mills, 2019.			

10. Correlations between the content of the course and the requirements of the professional field and relevant employers

The course content was adapted following consultations with members of the Romanian Society of Pathology, specialist physicians from clinical laboratories, and academic staff from medical universities. The discussions focused on aligning the curriculum with current medical practice requirements, employer expectations, and comparable programs in other medical faculties.

11. Assessment

Activity type	11.1 Assessment criteria	11.2 Assessment methods	11.3 Percentage of the final grade
11.4 Course	<p>For grade 5:</p> <p>The presentation contains minimal scientifically correct information.</p> <p>The topic is addressed in a general manner, with limited examples.</p> <p>The presentation is brief but fits within the assigned topic.</p> <p>The delivery is legible, though expression is only partially clear.</p> <p>For grade 10:</p> <p>The presentation is complete, coherent, and scientifically accurate.</p> <p>The information is current, well-organized, and supported by relevant examples.</p> <p>The presentation demonstrates the ability to synthesize and express ideas clearly.</p> <p>A well-prepared visual aid is used and well integrated into the presentation.</p> <p>Responds to questions and shows a deep understanding of the subject.</p>	Individual PowerPoint presentation, correlated with the course topic.	50%
11.5 Laboratory/Practical activity	<p>For grade 5:</p> <p>Demonstrates basic knowledge and identifies essential elements of the topic.</p> <p>Participates in the activity, but contribution is minimal.</p>	Applied individual PowerPoint presentation, aligned with the practical work topics.	50%

	<p>The presentation contains relevant but superficial information.</p> <p>Requires support for correct interpretation of the specimens.</p> <p>For grade 10:</p> <p>Applies theoretical concepts correctly and precisely in specimen analysis.</p> <p>Clearly argues and explains observations.</p> <p>The presentation is well-structured, with relevant images and pertinent comments.</p> <p>Demonstrates autonomy, active involvement, and critical interpretation skills.</p>		
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<p>11.6 Minimum performance standard-basic knowledge</p> <p>Mastering the main theoretical concepts and practical skills of immunohistochemistry applied to the analysis of human tissues and cells.</p> <p>Knowledge of the basic terminology specific to immunohistochemistry and cellular and tissue morphology;</p> <p>Recognition and classification of the main tissue markers used in diagnosis;</p> <p>Understanding the principles of staining methods and the ability to distinguish between positive and negative reactions;</p> <p>Reasoning and analytical skills in interpreting simple immunohistochemical preparations;</p> <p>Active participation in practical work and delivering a presentation related to the studied topic.</p>			
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Date	Signature of the course holder	Signature of the laboratory/seminar holder
Signature of the Head of Discipline FLAVIA ZARA, MD, PhD, Professor		
Date of approval in the Department	Signature of the Head of Department MD, PhD, Professor ALIS LILIANA CARMEN DEMA	