



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ

HELLENIC REPUBLIC

ΕΘ.Α.Α.Ε.

H. A .H. E.

ΕΘΝΙΚΗ ΑΡΧΗ ΑΝΩΤΑΤΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

HELLENIC AUTHORITY FOR HIGHER EDUCATION

## **University of West Attica**

**School of Health and Care Sciences**

**Department of Biomedical Sciences**

### **Postgraduate Studies**

## **"Biomedical Methods and Technology in Diagnosis"**

Course Outline

**HISTOPATHOLOGY – ONCOLOGY**



ATHENS 2023

## COURSE OUTLINE

### (1) GENERAL

<b>SCHOOL</b>	School of Health & Care Sciences		
<b>ACADEMIC UNIT</b>	Biomedical Sciences		
<b>LEVEL OF STUDIES</b>	Postgraduate Studies		
<b>COURSE CODE</b>	IA4	<b>SEMESTER</b>	First
<b>COURSE TITLE</b>	HISTOPATHOLOGY-ONCOLOGY		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <i>If credits are awarded for separate components of the course, e.g. lectures, laboratory Exercises etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>
Review of existing literature		4	7
Experimental procedure			
<i>Add rows if needed. The teaching organization and teaching methods used are described in detail in (d).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialization general knowledge, skills development</i>	<b>Skills development</b> Special background-Specialization of general knowledge		
<b>PREREQUISITE COURSES:</b>	-----		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	English		
<b>IS THE COURSE OFFERED IN ERASMUS STUDENTS</b>	NO		
<b>COURSE WEBSITE (URL)</b>	<a href="https://eclass.uniwa.gr/courses/VIM121/">https://eclass.uniwa.gr/courses/VIM121/</a> <a href="https://eclass.uniwa.gr/courses/TIE197/">https://eclass.uniwa.gr/courses/TIE197/</a>		

### (2) LEARNING OUTCOMES

<p><b>Learning Outcomes</b></p> <p><i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire after the successful completion of the course are described.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> <li>• <i>Description of the Level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i></li> <li>• <i>Descriptors of Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i></li> <li>• <i>Guidelines for writing Learning Outcomes</i></li> </ul> <p>The course includes lectures and demonstrations of laboratory methods describing the techniques of Molecular Histopathology and their application in Oncology. The course emphasizes on the one hand on Molecular Histopathology, which is currently necessary for the study of the pathogenesis and progression of diseases based on disorders of genes and their products, and on the other hand on the applications of the main techniques of Molecular Histopathology in Oncology. Also, the course highlights the possibilities of approaching the problems of Oncology with the help of these techniques in relation to a) investigation of the pathogenetic mechanisms of carcinogenesis, b) diagnosis, c) staging, d) prognosis and e) treatment of neoplasias.</p>
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By presenting the various techniques and prognostic and predictive markers for various categories of neoplasms, students will achieve the following learning outcomes:

- a) the **knowledge** to recognize and describe the spectacular results of the application of these techniques for the future of Oncology and especially for the prevention, early diagnosis, prognosis and treatment of neoplastic lesions
- b) the appropriate **skill in** understanding, explaining and applying the above techniques in clinical practice and
- c) the appropriate **ability** to compare and evaluate new techniques of Molecular Histopathology and Oncology.

### General Competences

*Taking into consideration the general competencies that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?.*

<i>Search for, analysis and synthesis of data, and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>	<i>.....</i>
<i>Production of new research ideas</i>	<i>Others...</i>
	<i>.....</i>

The aim of the course is to inform and familiarize students with the techniques of Molecular Histopathology and to understand their applications in Oncology, as well as to understand their importance for the investigation of the pathogenetic mechanisms of carcinogenesis, the diagnosis, staging, prognosis and finally the response of neoplasms to treatment. Also, students will be able to search, analyze and synthesize data and information deriving from the use of the above technologies, which will be able to ensure their work in an interdisciplinary environment and the ability to generate new research ideas.

A necessary condition for the success of the application of these techniques is their use with a sense of responsibility, sincere interest and mainly with ethical criteria for human support.

### (3) SYLLABUS

1. Tumorigenesis and neoplasia, classification – staging, grading of tumors and prognosis.
2. Prognostic and Predictive Markers in Lung Cancer.
3. Prognostic and predictive markers in cancer.
4. Importance of immunohistochemistry in the study-diagnosis of neoplasms and targeted therapy.
5. Mechanisms of infiltration-metastasis of neoplastic cells.
6. Neoplastic cell characteristics, oncogenes – tumor suppressor genes.
7. Molecular basis of tumors and carcinogenesis.
8. Molecular markers in prognosis, monitoring of neoplasias.
9. Immunohistochemistry, principles of technique and common problems.
10. Liquid phase cytology.
11. Alimentary tract neoplasms, a modern approach for an integrated, targeted and personalized treatment.
12. The place of surgery in the treatment of cancer metastases. New aspects.
13. Diagnosis in gynecological cancer.

14. Flow cytometry.
15. Genetic predisposition and early diagnosis in endocrine tumors.

**Laboratory / Tutorial Exercises**

1. Practical analysis of immunohistochemistry technique.
2. Analysis of cytology techniques.
3. Molecular techniques of neoplasms.
4. Practical analysis of technical immunohistochemistry technique.

**(4) TEACHING and LEARNING METHODS – EVALUATION**

<b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i>	Face to face in the classroom and in the lab.	
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education, communication with students</i>	Possibility of video recording and / or computer visual reality of the techniques of Molecular Histopathology - Oncology	
<b>TEACHING METHODS</b> <i>The manner and methods are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.  The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS.</i>	<b>Activity</b>	<b>Semester Workload</b>
	Lectures	45
	Laboratory exercises	45
	Essay writing	30
	Specialized seminars	30
	Essay writing	50
	<b>Course total</b>	<b>200</b>
<b>STUDENT PERFORMANCE EVALUATION</b> <i>Description of the evaluation procedure  Language of evaluation, methods of evaluation, summative or conclusive, multiple choice, questionnaires short answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation laboratory work, clinical examination of patient, art interpretation, other  Specifically--defined evaluation criteria are given, and where they are accessible to students are mentioned.</i>	<ol style="list-style-type: none"> <li>1. Written final exam (100%) including: <ul style="list-style-type: none"> <li>• Short answer questions</li> <li>• Multiple-choice test</li> <li>• Written exam in a selected thematic unit</li> <li>• Laboratory work in techniques</li> </ul> </li> </ol>	

• **ATTACHED BIBLIOGRAPHY**

*-Suggested bibliography :*

**A. Greek**

1. Molecular Histopathology Techniques in Oncology. Kapranos N, Rontogianni D. Chapter 8, p. 103-126, Clinical Oncology, Issue A, E.E.P.O.E., (2007).

**B. Foreign language**

1. In Situ Molecular Pathology and Co-Expression Analyses. Gerard J. Nuovo, (2013).
2. Fluorescence in situ Hybridization (FISH): Protocols and Applications (Methods in Molecular Biology). Joanna M. Bridger Keith Morris, (2010).
3. PCR Technology: Current Innovations. Tania Nolan and Stephen A. Bustin, (2013).
4. Cell and Tissue Based Molecular Pathology: A Volume in the Foundations in Diagnostic Pathology Series. Raymond R. Tubbs DO , Mark H. Stoler MD, (2008).
5. Formalin-Fixed Paraffin-Embedded Tissues: Methods and Protocols (Methods in Molecular Biology). Fahd Al-Mulla, Hinrich Göhlmann, (2011).
6. Immunohistochemistry: Basics and Methods. Igor B, Werner Böcker, (2010).
7. Immunocytochemistry and In Situ Hybridization in the Biomedical Sciences Julian E. Beesley, (2013).

*-Related scientific journals:*

1. Molecular Pathology
2. Experimental and Molecular Pathology
3. Applied immunohistochemistry and Molecular Morphology
4. Journal of Molecular Diagnosis
5. Molecular Oncology
6. Histology and Histopathology
7. Anticancer Research
8. Molecular Histology