ONCOGENETICS

1. IMPRINT

Academic Year	2025/2026
Department	Faculty of Medicine
Field of study	Medicine
Main scientific discipline	Medical sciences
Study Profile	General academic
Level of studies	Uniform MSc
Form of studies	Full time studies
Type of module / course	Obligatory
Form of verification of learning outcomes	Completion
Educational Unit / Educational Units	Department of Tumor Biology and Genetics Medical University of Warsaw Pawińskiego 3B 02-106 Warsaw, Poland Email: onkogenetyka@wum.edu.pl Phone: (4822) 599-1670
Head of Educational Unit / Heads of Educational Units	Prof. Tomasz Stokłosa, MD, PhD *tomasz.stoklosa@wum.edu.pl*
Course coordinator	Prof. Tomasz Stokłosa, MD, PhD, *tomasz.stoklosa@wum.edu.pl*
Person responsible for syllabus	Prof. Tomasz Stokłosa, MD, PhD, *tomasz.stoklosa@wum.edu.pl* Grzegorz Placha, MD, PhD *grzegorz.placha@wum.edu.pl*
Teachers	Prof. Tomasz Stokłosa, MD, PhD *tomasz.stoklosa@wum.edu.pl* Marcin Machnicki, PhD *mmachnicki@wum.edu.pl* Anna Pastwińska, PhD, *anna.pastwinska@wum.edu.pl* Grzegorz Placha, MD, PhD *grzegorz.placha@wum.edu.pl* Monika Kolanowska, PhD (guest lecturer)

2. BASIC INFORMATION

Year and semester of studies	III year, 5 semester	**Number of ECTS credits**	1.00

FORMS OF CLASSES **Contacting hours with academic teacher**	**Number of hours**	**ECTS credits calculation**
Lecture (L)		
Seminar (S)	10 (including 2 hours of seminar provided in e-learning)	0,5
Discussions (D)		
e-learning (e-L)	2	
Practical classes (PC)	3	0,2
Work placement (WP)		
Unassisted student's work		
Preparation for classes and completions	6	0,3

3. COURSE OBJECTIVES

O1	Students will be provided with basic knowledge of the role of genetic research in modern oncology and molecularly targeted therapy
O2	Students will be provided with general knowledge about modern methods of genetic research used in oncology and hemato-oncology
O3	Students will be provided with competence in the selection of an appropriate molecular technique and commissioning an appropriate genetic test to search for a genetic defect

4. STANDARDS OF LEARNING – DETAILED DESCRIPTION OF EFFECTS OF LEARNING

Code and number of the effect of learning in accordance with standards of learning	C.W4 C.W7 C.W9 C.W11 E.W24 C.W41 C.W42 C.U3 C.U5 B.U10

Knowledge – Graduate* knows and understands:	
C.W4	The graduate knows and understands the structure of chromosomes and the molecular basis of mutagenesis
C.W7	The graduate knows and understands aberrations of autosomes and heterosomes, which are the cause of diseases, including oncogenesis and cancer
C.W9	The graduate knows and understands the basic methods of genetic diagnostics of point and large mutations, implicated in cancer
C.W11	The graduate knows and understands genetic mechanisms of drug resistance by tumor cells
E.W24	The graduate knows and understands basics of early detection of tumours and oncology screening principles;
C.W41	The graduate knows and understands indications for genetic testing performed to ensure individualised pharmacotherapy
C.W42	The graduate knows and understands basic directions of therapy development, in particular the possibility of cell therapy and gene therapy in specific diseases
Skills– Graduate* is able to:	
C.U3	The graduate is able to make decisions about the need to perform cytogenetic and molecular tests
C.U5	The graduate is able to assess the risk of giving birth to an affected child based on family predispositions and influence of environmental factors;

** In appendix to the Regulation of Minister of Science and Higher education from 26th of July 2019 „graduate", not student is mentioned.*

5. ADDITIONAL EFFECTS OF LEARNING *(non-compulsory)*

Number of effect of learning	**Effects of learning i time**
Knowledge – Graduate knows and understands:	
K1	The graduate knows and understands the basics of early cancer detection and the principles of screening in oncology
K2	The graduate knows and understands the principles of collecting material for toxicological and hemogenetic tests
Skills– Graduate is able to:	
S1	The graduate is able to use databases, including the Internet, and search for the necessary information with the available tools
Social Competencies – Graduate is ready for:	
SC1	The graduate is ready to use reliable sources of information.

6. CLASSES

Form of class	Class contents	Effects of Learning
Seminars	Seminar 1 ***(e-learning platform***) self-completed before the course - Introduction to oncogenetics. Carcinogenesis, oncogenes and suppressor genes. Types of genetical aberrations in tumors.	CW4
	Seminar 2 - The most important advances in cancer genetic research in the last decade. A brief history of cancer genetics research from Rous sarcoma virus to targeted therapy and personalized oncology. Introduction to precision oncology, terms such as “actionable mutations”, “tumor profiling”, “tumor mutational burden”.	C.W4; C.W7, C.W11
	Seminar 3- Hereditary cancers: genetic predisposition to cancer development; recommendations for diagnostics and prevention. Selected cases and genetic testing revealing the genetic basis of hereditary cancers.	C.W7; C.W9; C.W41; C.W42; E.W24; B.U10; C.U3; K1
	Seminar 4- Sporadic cancers: molecular targets for personalized medicine and application of high-throughput analyses. Integration of molecular data in diagnostics, tumors classification and targeted treatment.	C.W4; C.W7; C.W9; C.W11; C.W41; C.W42; B.U10; C.U3 ; K2
	Seminar 5 – Diagnosis of hematologic malignancies based on cytogenetic and molecular techniques. Molecular biology and cytogenetic methods used in hematology: sample collection, DNA/RNA isolation, in vitro culture, karyotype and FISH analysis, PCR and NGS testing. Analysis of selected clinical cases, interpretation of test results.	C.W9; C.U3
Practical classes	Molecular tumor board (MTB) simulation: interactive analysis of clinical cases based on genetic analysis results and available online databases.	C.W11; C.W41; C.W42; B.U10; C.U3

7. LITERATURE

Obligatory

Robbins, Cotran & Kumar Pathologic Basis of Disease (11. ed.), Kumar, Abbas, Aster, 2025; (selected chapters)
Medical Genetics (6. ed.). Jorde, Carey, Bamshad, 2019; (selected chapters)

Supplementary

Molecular Biology of Cancer: Mechanisms, Targets, and Therapeutics (5. ed.). Pecorino; 2021
Selected publications and guidelines articles available in the e-learning platform as an integral part of the course

8. VERIFYING THE EFFECT OF LEARNING

Code of the course effect of learning	Ways of verifying the effect of learning	Completion criterion
C.W4 C.W7 C.W9	Checking the preparation for the seminars and practical classes. Getting familiar with the content posted on the e-learning platform.	Passing modules with short questions and quizzes on the e-learning platform.

C.W11 C.U3	Active participation in ALL seminars and practical classes. MCQ test (1st term and 2nd term) – 20 questions	Positive evaluation by the teacher. Passing threshold: <60% fail ≥60% pass

9. ADDITIONAL INFORMATION

The subject is closely related to genetic research conducted at the Medical University of Warsaw and diagnostically to the UCK Medical University of Warsaw. The presented clinical cases are examples from our own research and diagnostics activity.

Classes are held in weekly blocks from Monday to Friday in winter semester.
The course's detailed rules and the detail plan will be available on the website:
https://onkogenetyka.wum.edu.pl/en
two weeks before first classes.
In order to complete the course and enter the colloquium all activities on e-learning need to be completed, as well as active participation in all seminars and classes. In the case of a single, justified absence, it is possible to make up the class with another group.
The colloquium is organized by the Exam Bureau with the use of computer rooms of the Teaching Center, 1st term is usually in the week before winter session. The test consists of 20 MCQ questions.
In case of failure to obtain credit in two terms, the student has the option of applying for a commission term (with the consent of the Head of the Department). The final 3rd term (commission) may be conducted either as a test or oral and in accordance with the rules of examinations and credits of the Medical University of Warsaw

CONSULTATIONS are possible after making an appointment with the teacher via e-mail.

Student's scientific group is active in the Department.

ATTENTION

The final 10 minutes of the last class of the block/semester/year should be allotted for students to fill out the Survey of Evaluation of Classes and Academic Teachers