

SYLLABUS

The academic year when the cycle of instruction is commenced 2019-2025 [INT]

Module/course name:	Medical Genetics	Module code	LK.3.C.006 2
Faculty:	Faculty of Medicine MUL		
Major:	Medical		
Specialty:			
Level of study:	I (Bachelor studies) <input type="checkbox"/> II (Master studies) <input type="checkbox"/> Integrated Master studies X Doctoral studies <input type="checkbox"/>		
Mode of study:	full-time X part-time (extramural) X		
Year of study:	I <input type="checkbox"/> II <input type="checkbox"/> III X IV <input type="checkbox"/> V <input type="checkbox"/> VI <input type="checkbox"/>	Semester:	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 X 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/>
Module/course type:	obligatory X elective <input type="checkbox"/>		
Language of instruction:	Polish <input type="checkbox"/> English X		
Form of education	Hours		
Lecture	10		
Seminar			
Laboratory class	25		
E-learning			
Practical class			
Internship			
Other			
TOTAL			
Student's work input (participation in class, preparation, evaluation, etc.)	Student's hourly workload		
1. In class	35		
2. Student's own work including: 1 Preparation for class 2 Preparation for partials and finals	15		
Summary of the student's workload	50		
ECTS points for module/course	2		
Educational objectives: The course consists of the following parts: Human genome, Point mutations and polymorphisms, Chromosomal aberrations, Pathomechanisms of genetic diseases, Chromosomes, Immunogenetics, Oncogenesis and Molecular methods. During the course students write short quizzes. The course ends with the Final Test .			
The matrix of learning outcomes for module/ subject with reference to verification methods of the intended educational outcomes and forms of instruction:			

Learning outcome code	A student who has obtained a credit for the module/course has the knowledge/skill to:	Methods of verifying the achievement of the intended learning outcomes:	Form of instruction * provide the symbol
B.W13.	knows the function of nucleotides in a cell, primary and secondary structures of DNA and RNA and chromatin structure	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class
B.W14.	knows the function of human genome, transcriptome and proteome and basic methods applied in their studies; describes the processes of replication, repair and recombination of DNA, transcription and translation and degradation of DNA, RNA and proteins; knows the concept of gene expression control	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class
C.W1.	knows the basic concepts in genetics	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class
C.W2.	can describe the phenomena of gene feedback and cooperation	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class
C.W3.	can describe normal human karyotype and various types of sex determination	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class

C.W4.	can describe chromosome structure and molecular background of mutagenesis	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class
C.W5.	knows the principles of inheritance of different number of characters, inheritance of quantitative characters, independent inheritance of characters and extranuclear inheritance	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class
C.W6.	knows genetic predispositions associated with human blood groups and serological conflict in respect to Rhesus factor	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class
C.W7.	can describe autosomal and heterosomal aberrations causing diseases, including cancer, oncogenesis	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class
C.W9.	knows fundamentals of diagnosing gene and chromosomal mutations responsible for inherited and acquired diseases, including cancers	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class
C.W10.	assesses benefits and risks resulting from presence in the ecosystem of genetically modified organisms(GMO)	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class

C.W15.	knows the consequences of exposing human organism to various chemical and biological agents and the rules of prevention	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class
C.W22.	can describe major histocompatibility complex	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class
C.U1.	analyses genetic crosses and origins of human characteristics and diseases and assesses the risk of birth of a child having chromosomal aberrations	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class
C.U2.	identifies indications for performing prenatal tests	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class
C.U3.	is capable of taking decision on the need to perform cytogenetic and molecular tests	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class
C.U4.	performs morphometric measurements, analyses morphograms and records karyotypes of diseases	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class

C.U5.	assesses the risk for a given disease to appear in descendents, basing on family predispositions and influence of environmental factors	written exam (MCQ, matching test, true false test) short quiz (MCQ, true/false test, open questions) presentation	Lecture/class
C.U6.	assesses environmental hazards and uses basic methods allowing to find the presence of harmful factors (biological and chemical) in the biosphere		

EXAMPLES OF METHODS VERIFYING THE ACHIEVEMENT OF THE INTENDED LEARNING OUTCOMES:

In terms of knowledge: Oral exam (*non-standardized, standardized, traditional, problem-based*).

Written exam – the student produces/identifies answers)essay, report; structured short-answer questions /SSQ/; multiple choice questions /MCQ/; multiple response questions /MRQ/; matching test; true/false test; open cloze test)

In terms of skills: practical exam; Objective Structured Clinical Examination /OSCE/; Mini-CEX (mini – clinical examination); completion of a given assignment; project, presentation.

In terms of social competences:

A reflective essay; an extended observation by a supervisor/tutor; 360-degree assessment (feedback from teachers, peers, patients, other co-workers); self-assessment (portfolio included).

Course content: (use keywords referring to the content of each class following the intended learning outcomes):

Lectures:

1. Chromosome analysis – meiosis and mitosis, cell cultures, classical cytogenetics (banding techniques), molecular cytogenetics – FISH, CGH, array CGH.
2. Immunogenetics.
3. Molecular methods in medical genetics.
4. Prenatal diagnostics – aims, indications, noninvasive and invasive testing techniques, preimplantation testing.
5. Types of RNA. Role of non-coding RNA. MicroRNAs – their biogenesis and function, miRNAs as prognostic and predictive factors.

Laboratory class:

LAB 1 . INTRODUCTION TO GENETICS

LAB 2. HUMAN GENOME

LAB 3. POINT MUTATIONS AND POLYMORPHISMS

LAB 4. PATHOMECHANISMS OF GENETIC DISEASES

LAB 5. CHROMOSOMES AND THEIR ABERRATIONS

LAB 6. CHROMOSOME ANALYSIS

LAB 7. FROM GENES TO PROTEINS

LAB 8. IMMUNOGENETICS

LAB 9. Molecular methods – PCR method and its variants.

LAB 10. Molecular methods – DNA sequencing.

LAB 11. ONCOGENESIS – PART I

LAB 12. ONCOGENESIS – PART II

Obligatory literature:

L.B. Jorde, J.C. Carey, M.J. Bamshad "Medical Genetics (4th edition)" MOSBY ELSEVIER, 2016;

"Human genetics: from molecules to medicine" C.P. Schaaf, J. Zschocke, L. Potocki - Lippincott Williams & Wolters Kluwer business, 2012 (firsth edition).

Complementary literature:

"GENETICS" Ronald W. Dudek – Lippincott Williams & Wolters Kluwer business, 2010. ISBN 978-0-7817-9994-2.

Requirements for didactic aids (e.g. laboratory, multimedia projector, others...)

Laptop and multimedia projector.

Conditions for obtaining a credit for the subject:

Presence during classes and lectures.

Students are obliged to be familiar with the issues covered by the lecture held during respective week and with the material to be discussed during classes according to the topic schedule.

To PASS the Final Test, the required final score is 60% of correctly answered questions out of all questions.

The name and address of the department/clinic where the course is taught (module/course); contact details (phone number/ email address):**DEPARTMENT OF CANCER GENETICS WITH CYTOGENETIC LABORATORY**

Address: RADZIWIŁŁOWSKA STREET 11 (COLLEGIUM MEDICUM BUILDING),

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Course: MEDICAL GENETICS

Head of Department: PROF. AGATA FILIP

Names of the author/authors of this syllabus:

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Signature of the head of the department/clinic

KIEROWNIK
Zakładu Genetyki Nowotworów
z Pracownią Cytogenetyczną

dr hab. n. med. Agata Filip

Dean's signature

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Date of submission: