

## DESCRIPTION OF THE COURSE OF STUDY

<b>Course code</b>	<b>0912-7LEK-C3.1-G</b>	
<b>Name of the course in</b>	Polish	<b>Genetyka</b>
	English	<b>Genetics</b>

### 1. LOCATION OF THE COURSE OF STUDY WITHIN THE SYSTEM OF STUDIES

<b>1.1. Field of study</b>	Medicine
<b>1.2. Mode of study</b>	Full-time
<b>1.3. Level of study</b>	Uniform master's studies
<b>1.4. Profile of study*</b>	General academic
<b>1.5. Specialization*</b>	Lack
<b>1.6. Unit running the course of study</b>	Faculty of Medicine and Health Sciences
<b>1.7. Person/s preparing the course description</b>	dr hab. n. med. Stanisław Gózdź, prof.UJK
<b>1.8. Person responsible for the course of study</b>	dr n.biol. Wioletta Adamus - Białek
<b>1.9. Contact</b>	dr n. biol.Wioletta Adamus – Białek; dr n. biol. Michał Majchrzak

### 2. GENERAL CHARACTERISTICS OF THE COURSE OF STUDY

<b>2.1. Affiliation with the module</b>	Preclinical studiem
<b>2.2. Language of instruction</b>	English
<b>2.3. Semesters in which the course of study is offered</b>	3 <sup>rd</sup> semester
<b>2.4. Prerequisites*</b>	Biology

### 3. DETAILED CHARACTERISTICS OF THE COURSE OF STUDY

<b>3.1. Form of classes</b>	LECTURE 15 hours.; CLASSES: 30 hours
<b>3.2. Place of classes</b>	Courses in the teaching rooms of the UJK, Faculty of Molecular Diagnostics, Genetic Counseling ŚCO
<b>3.3. Form of assessment</b>	LECTURE – L, CI. Credit with grade
<b>3.4. Teaching methods</b>	Conversational lecture, discussion, a case study in natural condition
<b>3.5. Bibliography</b>	<b>Required reading</b>
	<b>Further reading</b>

1. Medical Genetics, by Lynn B. Jorde PhD (Author), John C. Carey MD MPH (Author), Michael J. Bamshad MD (Author)  
2. Essential Medical Genetics (with FREE Desktop Edition) 6/e, Tobias, Connor, Ferguson-Smith, WILEY, 2011  
3. Color Atlas of Genetics (FLEXIBOOK) by Eberhard Passarge (Author)  
4. DeVita, Hellman and Rosenberg's Cancer: Principles & Practice of Oncology, 10<sup>th</sup> Ed.

### 4. OBJECTIVES, SYLLABUS CONTENT AND INTENDED TEACHING OUTCOMES

#### 4.1. Course objectives

- C1 Transferring the basic knowledge of genetics- types of inheritance, classification of birth defects, genetics counseling.  
C2 Acquiring the skills of gathering genetic interview and consulting pedigrees, using the diagnostic tests as well as their correct interpretation.  
C3 Forming a proper doctor attitude in the transfer of genetic information to the patient and their family.

#### 4.2. Detailed syllabus

##### Lectures

1. Cognitive value of the human genome in medical practice. Basic genetic concepts; 3 hours.
2. Monogenic diseases. The principles of genetic counseling; 3 hours.
3. The set with instability of chromosomes. Mitochondrial disease; 2 hours.
4. Epigenetic disease, multifactorial; 1 hour.
5. Bioethics in genetics; 2 hours.
6. Ways of developing genetic counseling; 2 hours.
7. Principles of inheritance predisposition to cancer. Molecular analysis DNA and RNA in detection of genetic predisposition to cancer.

##### Classes

1. Principles of writing pedigree. Drawing pedigrees; 3 hours.
2. Types of inheritance- determination on the basis of inheritance; 3 hours.
3. Probability, condition probability, genetic risk; 3 hours.
4. Calculations of probability in the pedigrees; 3 hours.
5. Connections analysis; 3 hours.
6. Polygenic diseases: association analysis, relative risk, odds ratio; 3 hours.
7. The basis of dysmorphology; 3 hours.
8. Molecular genetics. Sequencing analysis of DNA, the search for mutations, polymorphism and assess of their pathogenicity; 3 hours.
9. Cytogenetics. Analysis of karyotypes. 3 hours.
10. Credit. 3 hours.

#### 4.3. Education outcomes in the discipline

Code	A student, who passed the course	Relation to teaching outcomes
within the scope of <b>KNOWLEDGE:</b>		
W1.	knows the functions of the human genome, transcriptome and proteome and basic methods used in their study; describes the processes of replication, repair and recombination of DNA, transcription and translation and degradation of DNA, RNA and proteins; knows the concept of the regulation of gene expression;	B.W14. C.W1.
W2.	knows the basic concepts of genetics;	C.W1.
W3.	describes the phenomenon of coupling and interaction of genes;	C.W2.
W4.	describes normal human karyotype and various types of sex determination	C.W3.
W5.	describes the structure of chromosomes and the molecular mechanisms of mutagenesis;	C.W4.
W6.	knows the principles of inheritance, inheritance of quantitative traits, independent inheritance of traits and inheritance of extranuclear genetic information;	C.W5.
W7.	knows the genetics of blood groups and serological conflict in Rh system;	C.W6.
W8.	describes the aberrations of autosomes and heterosomes causing diseases, including cancer oncogenesis;	C.W7.
W9.	knows the factors affecting primary and secondary genetic balance of the population	C.W8.
W10.	knows the foundation for the diagnosis of gene and chromosome mutations responsible for hereditary and acquired diseases, including cancer;	C.W9.
W11.	determines benefits and risks arising from the presence in the ecosystem of genetically modified organisms (GMOs);	C.W10.
W12.	knows genetic mechanisms, the acquisition of drug resistance by microorganisms and tumor cells;	C.W11.
W13.	knows and understand the causes, symptoms, principles of diagnosis and therapeutic management of the most common hereditary diseases;	E.W35.



**5. BALANCE OF ECTS CREDITS – STUDENT’S WORK INPUT**

Category	Student's workload
	Full-time studies
<i>NUMBER OF HOURS WITH THE DIRECT PARTICIPATION OF THE TEACHER /CONTACT HOURS/</i>	<b>45</b>
<i>Participation in lectures*</i>	<b>15</b>
<i>Participation in classes, seminars, laboratories*</i>	<b>30</b>
<i>Preparation in the exam/ final test*</i>	
<i>Others*</i>	
<i>INDEPENDENT WORK OF THE STUDENT/NON-CONTACT HOURS/</i>	<b>55</b>
<i>Preparation for the lecture*</i>	<b>5</b>
<i>Preparation for the classes, seminars, laboratories*</i>	<b>35</b>
<i>Preparation for the exam/test*</i>	<b>15</b>
<i>Gathering materials for the project/Internet query*</i>	
<i>Preparation of multimedia presentation</i>	
<i>Others*</i>	
<b>TOTAL NUMBER OF HOURS</b>	<b>100</b>
ECTS credits for the course of study	<b>4</b>

*Accepted for execution (date and signatures of the teachers running the course in the given academic year)*

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