



Syllabus – academic year 2016/2017

Description of the course

Module/Course	MOLECULAR BIOLOGY	Group of detailed education results	
		Group code	Group name
		B	The scientific basis of medicine
		C	Preclinical sciences
Faculty	Medicine		
Major	medicine		
Specialties	Not applicable		
Level of studies	Uniform magister studies X * 1 st degree studies <input type="checkbox"/> 2 nd degree studies <input type="checkbox"/> 3 rd degree studies <input type="checkbox"/> postgraduate studies <input type="checkbox"/>		
Form of studies	X full-time <input type="checkbox"/> part-time <input type="checkbox"/> course		
Year of studies	I (first)	Semester	X Winter <input type="checkbox"/> Summer
Type of course	X obligatory <input type="checkbox"/> limited choice <input type="checkbox"/> free choice / elective		
Course	<input type="checkbox"/> major X basic		
Language of instruction	<input type="checkbox"/> Polish X English <input type="checkbox"/> other		

* mark with an X

Number of hours

Form of education

Unit teaching the course	Lectures (L)	Seminars (SE)	Auditorium classes (AC)	Major Classes – not clinical (MC)	Clinical Classes (CC)	Laboratory Classes (LC)	Classes in Simulated Conditions (CSC)	Practical Classes with Patient (PCP)	Specialist Classes – magister studies (SCM)	Foreign language Course (FLC)	Physical Education obligatory (PE)	Vocational Practice (VP)	Self-Study (Student's own work)	E-learning (EL)
Winter Semester														
	25	25	-	15	-	-	-	-	-	-	-	-	-	-
Summer Semester														
	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL per year: 65														



Educational objectives (max. 6 items)

- C1.** Students should learn the basics of contemporary genetics, experimental methods used in genetics and become prepared for the course of clinical genetics.
- C2.** Students receive knowledge about the mechanisms responsible for the integrity of the individual organism gene pool and for the transfer of genes between the subsequent generations in Prokaryota as well as in Eukaryota.
- C3.** Students gain information about the influence of environment pollution by mutagenic and carcinogenic substances on the human organism.
- C4.** Students get knowledge about the methods of molecular biology and their application in genetic studies.
- C5.** Students learn the fundamentals of medical parasitology.
- C6.** Students receive information about the structure and life cycles of human parasites and learn how to recognize the symptoms of parasitic infection

Education result matrix for module/course in relation to verification methods of the intended education result and the type of class

Number of course education result	Number of major education result	Student who completes the module/course knows/is able to	Methods of verification of intended education results (forming and summarising)	Form of didactic class <i>**enter the abbreviation</i>
W01	B.W.13	- student knows the function of nucleotides, DNA and RNA structures, structure of chromatin	test, colloquium, written exam	S, L
	B.W.14	- student knows function of human genome, transcriptome, proteome and knows the basic methods used in their studies, - describes DNA replication, transcription, translation, recombination, repair and degradation of DNA, RNA, knows the processes of gene expression control and regulation	test, written exam	S, L
W02	B.W.22	- student knows cell cycle, processes of proliferation, differentiation and aging of cells, apoptosis, necrosis and their role in organism functioning	test, colloquium, written exam	S, L
W03	C.W.1	- student knows the basic concepts of genetics	test, colloquium, written exam	S, L
	C.W.2	- student describes the gene linkage and interactions	test, colloquium, written exam	S, L
	C.W.3	- student describes normal human karyotype and different types of sex determination	test, colloquium, written exam	S, L
	C.W.4	- student describes chromosome structures and knows molecular	test, colloquium, written exam	S, L



W04	C.W.5	background of mutagenesis - student knows principles of inheritance of different number of traits, quantitative traits, independent inheritance of traits and cytoplasmic inheritance	test, colloquium, written exam	S, L
	C.W.6	- student knows the genetic determination of blood groups	test, colloquium, written exam	S, L
	C.W.7	- student describes autosomal and heterosomal aberrations leading to genetic diseases	test, colloquium, written exam	S, L
	C.W.8	- student knows factors affecting primary and secondary genetic equilibrium of population	test, colloquium, written exam	S, L
W05	C.W.13	- student knows epidemiology of parasitic infections including geographical localization	test, colloquium	MC
	C.W.14	- student knows influence of biotic (parasite) factors on human organism and human population as well as parasite invasion pathways; describes the consequences of parasitic infection and principles of infection prophylaxis	test, colloquium	MC
	C.W.15	- student knows invasive forms or development stages of chosen parasitic protozoa, helminths and arthropods, including their geographical localization	test, colloquium	MC
W06	C.W.16	- student describes the host-parasite relations and knows the basic symptoms of parasitic infection	test, colloquium	MC
	C.W.18	- student knows basic principles of parasite diagnostics	test, colloquium	MC
U01	C.U.1	- student analyses the genetic crosses and pedigrees of human traits and diseases, estimates the risk of birth of a child possessing chromosome aberrations - describes karyotypes of genetic diseases	test, colloquium	S, L
U02	C.U.5	- student estimates the risk of manifestation of certain genetic	test, colloquium	MC



U03	C.U.7	disease basing on predispositions of patients family - student recognizes the most common parasites knowing their life cycles, structure and symptoms of infection	test, colloquium	MC
	C.U.9	- student recognizes different parasites under microscope	oral response, credit during classes	MC

** L - lecture; SE - seminar; AC – auditorium classes; MC – major classes (non-clinical); CC – clinical classes; LC – laboratory classes; SCM – specialist classes (magister studies); CSC – classes in simulated conditions; FLC – foreign language course; PCP practical classes with patient; PE – physical education (obligatory); VP – vocational practice; SS – self-study, EL – E-learning .

Please mark on scale 1-5 how the above effects place your classes in the following categories:
communication of knowledge, skills or forming attitudes:

Knowledge: 5

Skills: 3

Student's amount of work (balance of ECTS points)

Student's workload (class participation, activity, preparation, etc.)	Student Workload (h)
1. Contact hours:	65
2. Student's own work (self-study):	93
Total student's workload	158
ECTS points for module/course	6.0
Comments	

Content of classes (please enter topic words of specific classes divided into their didactic form and remember how it is translated to intended educational effects)

Lectures

1. Regulation of gene expression with particular reference to eukaryotic organisms.
2. The organization of human genome; mitochondrial genome.
3. The cell cycle and its regulation.
4. Genetic determinants of the immune system functioning.
5. DNA diversity, DNA mutations, DNA repair mechanisms.
6. Mutagenesis: mutagens, the influence of medicines, chemicals, physical factors, and environmental pollution.
7. Selected human genetic X-linked diseases.
8. Population genetics.
9. Basic methods of molecular biology and their applications.
10. Basics of pharmacogenetics. Fundamentals of genetic engineering and biotechnology.

Seminars

1. Structure and properties of nucleic acids.
2. Structure and characteristics of the genetic code.
3. DNA replication, transcription and translation in prokaryotes and eukaryotes. Regulation of gene expression (operons) in prokaryotes.
4. Mendelian (transmission) genetics. Gene interactions. Cytoplasmic (extrachromosomal) inheritance.
5. Morgan's chromosomal theory of heredity.



<p>6. Types of sex determination. Lyon hypothesis. 7. Meiosis and gametogenesis. 8. Selected human autosomal diseases. Structural and numerical aberrations.</p>													
<p>Practical classes</p> <p>1. Protozoa and helminths of gastric and genitourinary systems. 2. Protozoa and helminths of tissues. 3. Flukes and cestoda of gastric and respiratory systems. 4. Nematode of gastric tract. 5. Arthropods and their role in transmission of parasitic diseases.</p>													
<p>Other ---</p>													
<p>Basic literature (list according to importance, no more than 3 items)</p> <p>1. Pierce BA, Genetics: a conceptual approach, WH Freeman & Co, 2008 2. Klug WS, Cummings MR, Spencer ChA, Palladino MA, Concepts of genetics, Pearson Benjamin Cummings, 2009. 3. Bogitsh BJ, Cheng TC, Human parasitology, Academic Press, 1998 (second edition)</p>													
<p>Additional literature and other materials (no more than 3 items)</p> <p>1. Turnpenny P, Ellard S, Emery's elements of medical genetics, Elsevier, 2007</p>													
<p>Didactic resources requirements (e.g. laboratory, multimedia projector, other...)</p> <p>Classroom equipped with multimedia, microscopes. Lecture hall equipped with multimedia.</p>													
<p>Preliminary conditions (minimum requirements to be met by the student before starting the module/course)</p> <p>Knowledge of genetics and parasitology on the high school level.</p>													
<p>Conditions to receive credit for the course (specify the form and conditions of receiving credit for classes included in the module/course, admission terms to final theoretical or practical examination, its form and requirements to be met by the student to pass it and criteria for specific grades)</p> <p>Passing 5 partial tests (transmission genetics, molecular genetics, human genetic diseases, protozoa, helminths) allows for getting credit and enter the final exam. Exam is in the form of single choice test and covers the genetics (seminars and lectures).</p>													
<table border="1"> <thead> <tr> <th>Grade:</th> <th>Criteria (only for courses/modules ending with an examination)</th> </tr> </thead> <tbody> <tr> <td>Very Good (5.0)</td> <td>91-100%</td> </tr> <tr> <td>Good Plus (4.5)</td> <td>82-90%</td> </tr> <tr> <td>Good (4.0)</td> <td>73-81%</td> </tr> <tr> <td>Satisfactory Plus (3.5)</td> <td>64-80%</td> </tr> <tr> <td>Satisfactory (3.0)</td> <td>55-63%</td> </tr> </tbody> </table>		Grade:	Criteria (only for courses/modules ending with an examination)	Very Good (5.0)	91-100%	Good Plus (4.5)	82-90%	Good (4.0)	73-81%	Satisfactory Plus (3.5)	64-80%	Satisfactory (3.0)	55-63%
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Name and address of module/course teaching unit, contact: telephone and e-mail address

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Coordinator / Person responsible for module/course, contact: telephone and e-mail address

Prof. dr hab. Andrzej Hendrich
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e-mail: andrzej.hendrich@umed.wroc.pl

List of persons conducting specific classes: full name, degree/scientific or professional title, discipline, performed profession, form of classes.

<u>LECTURES:</u>	prof. dr hab. Andrzej Hendrich, medical biology
<u>SEMINARS and CLASSES:</u>	dr Agnieszka Cisowska, medical biology, parasitology
	mgr Przemysław Leszczyński, medical biology
	dr Dorota Tichaczek-Goska, medical biology
	dr Maria Wesołowska, parasitology
	dr Dorota Wojnicz, medical biology

Date of Syllabus development

Syllabus developed by

29.06.2016

dr. Dorota Tichaczek-Goska

Signature of Head of teaching unit

KATEDRA I ZAKŁAD BIOLOGII
I PARAZYTOLOGII LEKARSKIEJ

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Kierownik
Andrzej Hendrich
prof. dr hab. Andrzej Hendrich

Signature of Faculty Dean

Wrocław Medical University
FACULTY OF MEDICINE
VICE DEAN FOR STUDIES IN ENGLISH
.....
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