



Educational objectives (max. 6 items)
C1. Students should learn the basics of contemporary genetics, molecular biology and experimental methods used in genetics.
C2. Students gain information about the influence of environment pollution by mutagenic and carcinogenic substances on the human organism.
C3. Students learn the fundamentals of medical parasitology, 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.4	- describes structure and function of important chemical compounds (nucleic acids-DNA,RNA) present in human organism	test, colloquium, written exam	SE, L
W02	B.W.14	- describes chromatin structure - define the basic terms used in genetics; list the genetic factors determining the human traits	test, colloquium, written exam	SE MC, SE, L
W03	B.W.16	- knows the interactions in the parasite-host system	test, colloquium,	MC
W04	B.W.17	- has knowledge in the field of genetics and molecular biology (explain the basic processes involved in gene expression and its regulation; such as replication, transcription, translation; - explain the impact of environment pollution by mutagenic and carcinogenic factors on human organism and to describe the phenotype effects of mutagenesis, chosen genetic diseases and mechanisms of their inheritance)	test, colloquium, written exam	MC, SE, L
W05	B.W.18	- knows the clinical application of the principles of genetics	test, colloquium, written exam	MC, L
W06	C.W.1	- knows the genera and species of parasites pathogenic to humans; describes the biology and morphology of human parasites (<i>Protozoa, Platyhelminthes</i> and <i>Nemathelminthes</i>)	test, colloquium	MC
W07	C.W.3	- describes the epidemiology and prophylactics of parasitic infections	test, colloquium	MC
W08	C.W.6	- knows pathogenic agents (internal and external)	test, colloquium	MC



W09	C.W.16	- describes the basic methods used in diagnosis of parasitic infections	test, colloquium, written exam	MC
U01	B.U.4	- uses the biological and ecological terms to analyze the human-environment relations	test, colloquium,	MC
U02	B.U.5	- uses the methods of genetics and molecular biology in disease diagnosis	test, written exam	MC, L
U03	C.U.4	- recognizes the basic symptoms of parasitic infections and uses the prophylactic methods	test, colloquium,	MC
K01		- student willingly broadens knowledge and skills - understands the need of learning, can inspire and organize the learning process of others	test, colloquium, written exam	SE, MC, L
K02		- student cooperates in a group in order to solve problems - can take care of your own safety and that of people at your doorsteps	observation of a student during classes	MC
K03		- student searches for materials for classes and critically evaluates information sources	test, colloquium, written exam	SE, MC, L

** 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

Social competences: 1

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

Student's workload (class participation, activity, preparation, etc.)	Student Workload (h)
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1. Contact hours:	40
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2. Student's own work (self-study):	25
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Total student's workload	65
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ECTS points for module/course	6.0
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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)



<p>Lectures</p> <ol style="list-style-type: none">1. Structure of genetic material, DNA double helix. Replication, transcription and translation in <i>Eukaryotes</i>.2. Regulation of gene expression with particular reference to eukaryotic organisms.3. The organization of human genome; mitochondrial genome.4. DNA diversity, DNA mutations, DNA repair mechanisms. Mutagenesis: mutagens, the influence of medicines, chemicals, physical factors, and environmental pollution.5. Basic methods of molecular biology and their applications.
<p>Seminars</p> <ol style="list-style-type: none">1. DNA and chromatin structure and organization. DNA replication in Prokaryotes.2. The genetic code features. Protein synthesis in prokaryotic organisms. Operon theory.
<p>Practical classes</p> <ol style="list-style-type: none">1. Mendelian genetics. Meiosis and gametogenesis. Gene cooperation, cytoplasmic inheritance.2. Morgan theory of chromosomal inheritance. Sex determination, Lyon hypothesis.3. Mechanisms of gene and chromosomal (structural and numeric) mutations.4. Chosen autosomal and X-linked genetic diseases.5. Parasitology – <u>Flagellates</u>: <i>Trichomonas vaginalis</i>, <i>Trichomonas tenax</i>, <i>Giardia intestinalis</i>, <i>Trypanosoma brucei gambiense</i>, <i>Leishmania tropica</i>, <i>Leishmania donovani</i>6. Parasitology – <u>Amoebae</u>: <i>Entamoeba histolytica/dispar</i>, <i>Entamoeba gingivalis</i>, <i>Acanthamoeba castellanii</i>, <i>Naegleria fowleri</i>; Apicomplexans: <i>Plasmodium</i> spp., <i>Toxoplasma gondii</i>, <i>Cryptosporidium parvum</i>7. Parasitology – <u>Trematoda</u>: <i>Fasciola hepatica</i>, <i>Paragonimus westermani</i>, <i>Clonorchis sinensis</i>, <i>Schistosoma</i> spp.; <u>Cestoda</u>: <i>Diphyllobothrium latum</i>, <i>Taenia saginata</i>, <i>Taenia solium</i>, <i>Hymenolepis nana</i>, <i>Echinococcus granulosus</i>, <i>Echinococcus multilocularis</i>8. Parasitology – <u>Nematoda</u>: <i>Ascaris lumbricoides hominis</i>, <i>Enterobius vermicularis</i>, <i>Trichuris trichiura</i>, <i>Trichinella spiralis</i>, <i>Loa loa</i> <p>Parasitology course contents: life cycles, geographical distribution, diagnosis and diagnostic features of the parasites' developmental forms, disease symptoms caused by the parasites, epidemiology, prevention of infection</p>
<p>Other ----</p>
<p>Basic literature (list according to importance, no more than 3 items)</p> <ol style="list-style-type: none">1. A. Cisowska, D. Tichaczek-Goska, M. Wesołowska, D. Wojnicz "Medical biology for students faculty of medicine and faculty of dentistry" University of Medicine in Wrocław (2006, 2007, 2010)2. Klug WS, Cummings MR, Spencer ChA, Palladino MA, Concepts of genetics, Pearson Benjamin Cummings, 2009.3. B.J. Bogitsch, T.C. Cheng „Human parasitology“ 2nd edition, Academic Press 1998 <p>Additional literature and other materials (no more than 3 items)</p> <ol style="list-style-type: none">1. Connor M., Ferguson-Smith M. "Essential medical genetics" Blackwell Science Ltd 19972. R. Muller "Worms and human disease" Second edition, CABI Publishing 20023. Campbell NA, Reece JB, Cain ML et al. Biology. A global approach. Pearson, 2015 (10th edition)
<p>Didactic resources requirements (e.g. laboratory, multimedia projector, other...)</p> <p>Classroom equipped with laptop, multimedia, microscopes.</p> <p>Lecture hall equipped with laptop and multimedia.</p>



Preliminary conditions (minimum requirements to be met by the student before starting the module/course) Knowledge of genetics on the high school level.	
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) 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).	
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%

Name and address of module/course teaching unit, contact: telephone and e-mail address

Department of Biology and Medical Parasitology,
J. Mikulicza-Radeckiego Street 9, Wrocław,
tel. 71 784 15 12 (secretary)
e-mail: malgorzata.pekalska-cisek@umed.wroc.pl

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

Prof. dr hab. Andrzej Hendrich
tel. 71 784 15 12 (secretary); 71 784 15 11
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.

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



Date of Syllabus development

Syllabus developed by

26.06.2017

Dr Dorota Tichaczek-Goska

Signature of Head of teaching unit

Uniwersytet Medyczny we Wrocławiu
KATEDRA ZAKŁAD BIOLOGII
I PARAZYTOLOGII LEKARSKIEJ
kierownik

Signature of Faculty Dean

prof. dr hab. Andrzej Hendrich