



SYLLABUS of the MODULE (SUBJECT)

General Information

Code		Title	Microbiology
Module type			Obligatory
Faculty			Faculty of Medicine
Field of study			Medicine (KL)
Level of study			II level/ long-cycle (2J)
Mode of study			intramural
Year of study; semester			II; spring; III; winter
ECTS points			I st semester – 3; II nd semester - 5
Types of training			Seminars – 16hrs; Practical – 20 hrs (I st semester) Seminars – 14hrs; Practical – 20hrs (II nd semester)
Tutor responsible for the module			Prof. dr hab. n.med. Barbara Dołęgowska barbara.dolegowska@pum.edu.pl, mikrobio@pum.edu.pl
Tutors conducting the subject			dr n.med. Joanna Jursa-Kulesza dr n.med. Magdalena Kaczała dr n.med. Ludmiła Szymaniak dr n.med. Magdalena Mnichowska-Polanowska dr n.med. Katarzyna Galant dr n.med. Helena Masiuk
Web site			www.pum.szczecin.pl -> Wydział Lekarski z Oddziałem Nauczania w Języku Angielskim -> Zakład Mikrobiologii i Diagnostyki Immunologicznej
Language			English

Detailed information

Module objectives		<p>The aim of education is to familiarize students with the general microbiology, in particular:</p> <ul style="list-style-type: none"> a/ Microorganisms (bacteria, fungi) and viruses responsible for infections in humans, b/ The importance of the human microbiota, c/ The general principles of proper collection of specimen for microbiological analysis, d/ The general rules and procedures of microbiological diagnostics, e/ The principles determining the susceptibility of microbes to antimicrobial agents, f/ The mechanisms of action of antimicrobial agents <p>The aim of education in IInd semester is to familiarize students with the clinical microbiology, in particular:</p> <ol style="list-style-type: none"> 1. clinical pictures of particular infections and its microbiological diagnostic 2. laboratory results of microbiological examinations, results interpretation principles 3. resistance mechanisms of bacteria to antibacterial agents 4. rational antimicrobial chemotherapy 5. infections prevention and control 6. hospital – acquired infections
Prerequisite/essential requirements	Knowledge	Basics of prokaryotic and eukaryotic cell structure and their functions. Basics the basics of non-specific and specific responses to infection, basic concepts of bacterial genetics.
	Skills	Microscope operating, biological samples safe handling, compliance with microbiological safety rules.
	Competences	Self – education, integration of the knowledge obtained on other preclinical courses, co-operation with team members (class mates).

Description of the learning outcomes for the subject /module			
Number of learning outcome	Student, who has passed the (subject) Knows /is able to /can:	SYMBOL (referring the standards) EKK	Method of verification of learning outcomes
KL2JPW01	Knows the basics of genetics	K_C.W01	Continuous assessment class test, final test
KL2JPW02	classifies micro-organisms taking into consideration both pathogenic ones and those present in physiological flora	K_C.W12	Continuous assessment class test, final test
KL2JPW03	knows the epidemiology of transmission of diseases by viruses, bacteria, fungi and parasites and geographic areas of their occurrence	K_C.W13	Continuous assessment class test, final test
KL2JPW04	knows influence of abiotic and biotic environmental factors (viruses, bacteria) on human body and population and how they penetrate into human organism; is able to describe consequences of exposure to different chemical and biological agents and the rules of prophylaxis	K_CW14	Continuous assessment class test, final test

KL2JPW05	knows the symptoms of iatrogenic infections, their manner of spread and pathogens causing changes of certain organs	K_CW17	Continuous assessment class test, final test
KL2JPW06	knows and understands principles of microbiological and parasitological diagnostics	K_CW18	Continuous assessment class test, final test
KL2JPW07	knows bases for disinfection, sterilization and aseptic procedures	K_CW19	Continuous assessment class test, final test
KL2JPW08	knows basic cell structures and their functions	K_AW4	Continuous assessment class test, final test
KL2JPW09	knows and understands causes, symptoms, diagnosis and therapeutic and prophylactic procedures with regard to most frequent bacterial, viral, parasitic diseases and mycosis, incl. pneumococcal infection, viral hepatitis, AIDS, sepsis and hospital infection	K_EW32	Continuous assessment class test, final test
KL2JPW10	knows types of biological materials used in laboratory diagnostics and rules governing sampling	K_EW37	Continuous assessment class test, final test
KL2JPW11	knows theoretical and practical bases of laboratory diagnostics	K_EW38	Continuous assessment class test, final test
KL2JPW12	knows functions of genome, transcriptome and proteome as well as basic methods applied to investigate these; describes processes of DNA replication, repair and recombination, processes of transcription and translation, knows the concepts of gene expression regulation	K_BW14	Continuous assessment class test, final test
KLJPW13	knows main mechanisms of action of drugs and their metabolism with regard to age	K_CW35	Continuous assessment class test, final test
KLJPW14	knows most important undesirable actions of drugs, incl. ones resulting from drug-drug interaction	K_CW38	Continuous assessment class test, final test
KL2JPU01	operates optical microscope and is able to exploit immersion	K_AU01	
KL2JPU02	can prepare and identify pathogens under a microscope	K_CU09	Completed protocol
KL2JPU03	interprets the results of microbiological examination	K_CU10	Completed protocol
KL2JPU04	interprets laboratory investigations and identifies reasons for deviations	K_EU24	Completed protocol
KL2JPU05	collects specimen to be used in laboratory diagnostics	K_EU28	Completed protocol
KL2JPU06	performs basic procedures and operations, incl.: nose, throat and skin swabs	K_EU29	Completed protocol
KL2JPU07	uses databases, incl. on-line bases and searches for information required by means of available tools	K_BU11	Completed protocol
KL2JPU08	reviews medical literature, incl. English literature and draws conclusions on the basis of available literature	K_DU17	Completed protocol

KL2JPU09	knows rules of teamwork	K_DW15	Completed protocol
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Matrix presenting the learning outcomes of the subject/module in relation to the form of classes

Number of learning outcome	Student, who has passed the (subject) Knows /is able to /can:				
		Lectures	Seminars	Students	Practical classes
KL2JPW01	Knows the basics of genetics		x		x
KL2JPW02	classifies micro-organisms		x		x
KL2JPW03	knows the epidemiology of diseases		x		x
KL2JPW04	knows influence of abiotic and biotic environmental factors		x		x
KL2JPW05	knows the symptoms of iatrogenic infections		x		x
KL2JPW06	knows and understands principles of microbiological and parasitological diagnostics		x		x
KL2JPW07	knows bases for disinfection, sterilization and aseptic procedures		x		x
KL2JPW08	knows basic cell structures and their functions		x		x
KL2JPW09	knows causes, symptoms, diagnosis and therapeutic and prophylactic procedures with regard to most frequent bacterial, viral, parasitic diseases		x		x
KL2JPW10	knows types of biological materials used in laboratory diagnostics and rules governing sampling		x		x
KL2JPW11	knows theoretical and practical bases of laboratory diagnostics		x		x
KL2JPW12	knows functions of genome and the concepts of gene expression regulation		x		x
KL2JPW13	knows main mechanisms of action of drugs and their metabolism with regard to age		x		x
KL2JPW14	knows most important undesirable actions of drugs,		x		x
KL2JPU01	operates optical microscope and is able to exploit immersion				x
KL2JPU02	can prepare and identify pathogens under a microscope				x
KL2JPU03	interprets the results of microbiological examination				x
KL2JPU04	interprets laboratory investigations and identifies reasons for deviations				x
KL2JPU05	collects specimen to be used in laboratory diagnostics				x
KL2JPU06	uses databases, incl. on-line bases and searches for information required by means of available tools				x
KL2JPU07	uses databases, incl. on-line bases and searches for information required by means of available tools				x
KL2JPU08	reviews medical literature, incl. English literature and draws conclusions on the basis of available literature				x
KL2JPU09	knows rules of teamwork				x

Module (subjects) content		
Symbol of teaching programme	Content of teaching programme	References to learning outcomes
Seminar/class 01 Seminar/class 02	Basics of medical microbiology: morphology and physiology of bacteria; basics of differentiation	K_CW01, K_CW12, K_BW14, K_AW4, K_CU09, K_AU01

Seminar/class 03	Basics of medical mycology; differentiation of fungi	K_CW01, K_CW12, K_CW13, K_CW14, K_AW4
Seminar/class 04	Basics of medical virology; isolation and detection	K_CW01, K_CW13, K_CW13, K_AW4
Seminar/class 05	Classification, characteristic and differentiation of Gram positive bacteria	K_CW12, K_CW18, K_EW38, K_CU10
Seminar/class 06	Classification, characteristic and differentiation of Gram – negative bacteria	K_CW12, K_CW18, K_EW38, K_CU10
Seminar/class 07	Human microbiota; diagnostic of anaerobic infections	K_CW12, K_CW17, K_EW37, K_EU28, K_CU10
Seminar/class 08	Laboratory diagnosis of infectious diseases, clinical manifestation	K_CW13, K_CW17, K_EW37, K_CU10, K_EU24, K_BU17
Seminar/class 09	Fungal infections, laboratory diagnosis, clinical manifestation and treatment	K_CW12, K_CW14, K_CW17, K_CW35, K_CW38K, EW32, K_EW38, K_CU10
Seminar/class 10	Viral infections, laboratory diagnosis, clinical manifestation and treatment	K_CW14, K_CW17, K_CW35, K_CW38K, EW32, K_EW38, K_CU10
Seminar/class 11	Microbial decontamination procedures	K_CW19, K_CU10
Seminar/class 12	Basics of bacterial chemotherapy, antimicrobial susceptibility testing rules	K_CW14, K_CW35, K_CW38, K_EW38

References and educational resources			
Basic literature 1. Medical Microbiology - Murray P.R., Rosenthal K.S., Pfaller M.A. the newest edition			
Further reading 1. Mims’ Medical Microbiology – Goering R.V., Dockrell H.M., Zuckerman M., Roitt I.M., Chiodini P.L. fifth edition 2. Notes on Medical Microbiology – K.N. Ward, K.C. McCartney, B. Thakker, 2008, 2nd ed, ISBN 9780443102844			
Student’s workload (balance sheet of ECTS points)			
Form of student’s activity (in-class participation; activeness, produce a report, etc.)	Workload [h]		
	Tutor	Student	Average
activities that require direct participation of tutors		36	
Preparation to the classes		13	
Reading of the indicated/specified literature		9	
Report writing/project making		3	
Time spent to prepare for the exam		12	
Other		-	
		73	
ECTS points	3		
Notes			

R- report refers to protocol, fulfilled by student on each practical classes, on which the credit is based on.

Methods of assessment, for example:

E – exam- problem resolving

S – verifying of practical skills

R – report

D – discussion

P – presentation

Others-