Pomorski Uniwersytet Medyczny w Szczecinie

Syllabus
General information

Module title	**Microbiology**
Module type	Obligatory
Faculty PMU	Faculty of Medicine (WL)
Major	Medicine
Level of study	long – cycle
Mode of study	Full – time study
Year of study/semester	Year IIIrd, semesters 5th and 6th
ECTS credits	1st – 3, 2nd – 4
Types of training	Lectures e-learning - 7hrs (4/3), Seminars 29hrs (16/13), practical classes – 34hrs (16/18)
Form of assessment	☐ graded assessment: ☐ descriptive ☐ test ☐ practical ☐ oral ☐ non-graded assessment ☐ final examination: ☐ descriptive ☒ test ☐ practical ☐ oral
Head of the Department	Dr n. med. Joanna Jursa-Kulesza asiaju@pum.edu.pl
Tutor responsible for the module	Dr n. med. Helena Masiuk
Department 's web site	https://www.pum.edu.pl/studia_iii_stopnia/informacje_z_jednostek/wmis/katedra_mikrobiologii_immunologii_i_medycyny_laboratoryjnej/samodzielna_pracownia_mikrobiologii_lekarskiej/
Language	English

Detailed information

Module objectives		The aim of education is to familiarize students with the general microbiology and to explain the basics of clinical Microbiology issues.
Prerequisite/essential requirements	Knowledge	Microorganisms classification, prokaryotic and eukaryotic cell structure and their functions, their functional specializations and ability to cause the diseases in humans and animals. The basics of non-specific and specific responses to infection, basic concepts of genetic acquisition of drug resistance by microorganisms, intrinsic and acquired resistance antimicrobial agents, strict pathogenic microorganisms and representatives of human microbiota, etiology of infectious diseases and its prevention, epidemiology of bacterial, fungal and viral infections, basics of microbiological, fungal and viral diagnostic, aseptic techniques, types of biological specimen used in microbiological diagnostics and rules of its collection and proceeding.
	Skills	Microscope operating, biological samples safe handling, compliance with microbiological safety rules. Evaluation of the environmental hazards and application of basic methods to detect the presence of harmful factors, recognition of the most common human infectious agents on the basis of their construction, microscope operating, biological samples safe handling, interpretation of microbiological results.
	Competences	Understanding of the concept and the need for accountability for the entrusted good, integration of the knowledge obtained on the other practical courses, systematic approach to learning, teamwork

Learning outcomes			
Number of learning outcome	**Student, who has passed the subject knows/is able to/can**	**Symbol (refferning to the standards)**	**Methods of verification of learning outcomes**
W01	Knows the basic cell structures of various microorganisms, their functional specializations and their abilities to cause the diseases in human and animals.	C.W01 C.W02 C.W10	Continuous assessment entry test, test examination
W02	Knows and understands the basic mechanisms of acquisition of drug resistance by microbes.	C.W11	Continuous assessment entry test, test examination
W03	Classifies microorganisms, including strict pathogenic and representatives of the human microbiota.	C.W12	Continuous assessment entry test, test examination

W04	Knows the influence of abiotic and biotic environmental factors on the human body, describes the consequences of the exposure of the humans body to various chemical and biological factors, knows principles of infectious diseases prevention.	C.W14	Continuous assessment entry test, test examination
W05	Knows the epidemiology of bacterial, viral and fungal infections	C.W13	Continuous assessment entry test, test examination
W06	Knows invasive forms or phases of development of selected parasitic fungi, protozoans, helminthes and arthropods	C.W15	Continuous assessment entry test, test examination
W07	Describes principles of parasite-host interactions	C.W16	Continuous assessment entry test, test examination
W08	Recognizes the basic symptoms of iatrogenic infections, knows the ways of infectious disease transmission.	C.W17	Continuous assessment entry test, test examination
W09	Knows and understands the basics of microbiological diagnostics.	C.W18	Continuous assessment entry test, test examination
W10	Knows the basics of disinfection, sterilization and aseptic procedures.	C.W19	Continuous assessment entry test, test examination
W11	Knows the basic principles of antibiotic therapy of infectious diseases, concepts of combination, targeted and empiric therapy.	C.W37	Continuous assessment entry test, test examination
W12	Knows the main side effects and antimicrobial agents interactions	C.W38	Continuous assessment entry test, test examination
W13	Understands the problem of antibiotic resistance	C.W39 C.W41	Continuous assessment entry test, test examination
W14	Knows the specimen collection principles, rules of specimen storage, transport and processing.	C.W18	Continuous assessment entry test, test examination
W15	Knows the main etiological agents of infections of particular human organs/systems: blood, respiratory tract, gastro-intestinal tract,	C.W18	Continuous assessment entry test, test examination

	genitourinary tract, sexual transmitted infections, nervous system, skin and soft tissues, bone and joints.		
U01	Assesses the environmental hazards and uses basic methods to detect biological and chemical harmful factors	C.U6	Continuous assessment entry test, test examination
U02	Recognizes the most common human pathogens on the basis of their construction, life cycles, knows the basic symptoms of chosen diseases	C.U7	Continuous assessment entry test, test examination
U03	Knows the application of antigen – antibody reaction in routine diagnostic of infectious diseases.	C.U8	Continuous assessment entry test, test examination
U04	Can prepare the stained smears and identifies bacteria under a light and fluorescent microscope.	C.U9	Continuous assessment entry test, test examination
U05	Interprets microbiological results having regard to false positive and negative results.	C.U10	Continuous assessment entry test, test examination
U06	Associates images of damage to tissues and organs with clinical symptoms, history interviews and results of laboratory determination	C.U11	Continuous assessment entry test, test examination
U07	Analyzes reaction, defense and adaptation phenomena and regulatory disturbances caused by etiological factors	C.U12	Continuous assessment entry test, test examination
U08	Develops a schedule of infection chemotherapy, empirical and guided chemotherapy	C.U15	Continuous assessment entry test, test examination
U09	Evaluates toxicological threats in different age groups and in states of renal and hepatic failure and prevents drug poisoning	C.U18	Continuous assessment entry test, test examination
K01	Accepts the need for ethical standards.	K01	student ‘s active participation and attitude assessment
K02	Understands the concept and the need for accountability for the entrusted good.	K02	student ‘s active participation and attitude assessment
K03	Shows a habit of self-education, understands the need for learning throughout life.	K03	student ‘s active participation and attitude assessment
K04	Cooperates with team members and class assistant.	K04	student ‘s active participation and

			attitude assessment
K05	Accepts the need of foreign language skills.	K10	student 's active participation and attitude assessment
K06	Takes care of own, co-workers and environmental safety.	K15	student 's active participation and attitude assessment
K07	Is aware of own limits and knows when consult the experts.	K17	student 's active participation and attitude assessment

Table presenting the LEARNING OUTCOMES in relation to the form of classes

Number of learning outcome	Learning outcome	Type of training						
		Lecture	Seminar	Practical/laboratory classes	Clinical studies	Simulations	E-learning	Other…
W01	C.W01 C.W02 C.W10		x				x	
W02	C.W11		x					
W03	C.W12		x	x			x	
W04	C.W14		x				x	
W05	C.W13		x				x	
W06	C.W15		x				x	
W07	C.W16		x				x	
W08	C.W17		x				x	
W09	C.W18		x				x	
W10	C.W19			x			x	
W11	C.W37		x	x			x	
W12	C.W38		x				x	
W13	C.W39 C.W41		x	x			x	
W14	C.W18		x	x				
W15	C.W18		x					
U01	C.U6		x					
U02	C.U7		x	x				
U03	C.U8		x	x				
U04	C.U9			x				

U05	C.U10			x				
U06	C.U11			x				
U07	C.U12			x				
U08	C.U15			x				
U09	C.U18		x					
K01	K01		x	x				
K02	K02		x	x				
K03	K03		x	x				
K04	K04		x	x				
K05	K10		x	x				
K06	K15			x				
K07	K17			x				

Table presenting TEACHING PROGRAMME			
Number of Teaching programme	**Teaching programme**	**Number of hours**	**References to learning outcomes**
Winter semester			
	Seminars		
TK01	Basics of medical bacteriology – morphology and physiology of bacteria	2	W01,W03,W04,W09
TK02	Basics of medical mycology: morphology and philology of yeasts, moulds and dermatophytes	1	W03,W04,W05,W06, W09
TK03	Basics of medical virology Bacteriophages, prions.	1	W03,W04,W05,W06, W09
TK04	Gram-positive bacteria: classification and characteristics	1	W03,W04,W05,W06, W07,W09
TK05	Gram-negative bacteria: classification and characteristics	1	W03,W04,W05,W,06 ,W07,W09
TK06	Human microbiota	1	W01, W03, W04, W09,W14
TK07	Laboratory diagnostic of infectious diseases.	1	W01, W03, W04, W09, W11

TK08	Fungal infections: laboratory diagnosis, clinical manifestations, treatment.	2	W03,W04, W05, W09, W11
TK09	Viral infections: laboratory diagnosis, clinical manifestations, treatment.	2	W01,W07, W08, W09, W11
TK11	Basics of chemotherapy , AST rules	4	W01,W10,W11
TK12	Antimicrobial resistance and rational chemotherapy	4	W11,WW12,W02,W13
Practical classes			
TK01	Differentation of bacteria (basics)	3	U04,U01,U02,K04,K07
TK02	Differentation of fungi .	2	U04,U01,U02,U05, U07,K04,K07
TK03	Viruses – isolation and detection.	2	U05, U03,K04,K07,K02,K06
TK04	Differentiation of gram-positive bacteria.	2	U04,U01,U02,U05,U06,U07,K04,K07
TK05	Differentiation of gram-negative bacteria.	2	U04,U01,U02,U05,U06,U07,K04,K07
TK06	Diagnosis of anaerobic infections	1	U04,U01,U02,U05,U06,U07,K04,K07
TK07	Diagnostics of fungal infections	1	U03,U04,U01,U05,U06,U07,K04,K07
TK07	Diagnostics of viral infections	1	U03,U04,U01,U05,U06,U07,K04,K07
TK08	Interpretation of AST	1	U08,K04,K07
TK09	Mechanisms of antimicrobial resistance	1	U05,U08,U09
Summer semester			
Seminars			
TK01	Microbiological diagnosis of respiratory tract		W01,W03,W02,W05,

	infections	1	W06,W08,W09, W14,W15
TK02	Gastrointestinal tract infections	1	W01,W03,W02,W05, W06,W08, W09,W14,W15
TK03	Urinary tract infections	1	W01,W03,W02,W05, W06,W08,W09, W14,W15
TK04	Sexually transmitted infections. Perinatal infections	1	W01,W03,W02,W05, W06,W08,W09, W14,W15
TK05	Antropozoonoses	4	W04,W06,W07,W11
TK06	Neuroinfections, blood infections, endocarditis	3	W01,W03,W02,W0 5,W06,W08,W09, W14,W15
TK07	Skin, bones and joints infections.	1	W01,W03,W02,W0 5,W06,W08,W09, W14,W15
TK08	Hospital acquired infections	1	W02,W11,W12,W13
TK09	Microbial decontamination	1	W10, W11
TK10	Opportunistic infections	2	W01,W02,W03,W02, W05,W06,W08,W09, W11,W12,W13,W14, W15
Practical classes			
TK01	Microbiological diagnosis of respiratory tract infections and eye infections	2	U02,U03,U04,U05, U06,U08,U09,K04, K06, K01
TK02	Microbiological diagnosis of gastrointestinal tract infections.	2	U02,U03,U04,U05, U06,U08,U09,K04, K06, K01

TK03	Microbiological diagnosis of urinary tract infections.	2	U02,U03,U04,U05, U06,U08,U09,K04, K06,K01
TK04	Microbiological diagnosis of sexually transmitted infections and perinatal infections (STIs).	2	U02,U03,U04,U05, U06,U08,U09,K04, K06,K01
TK05	Microbiological diagnosis of meningitis, blood infections and endocarditis.	3	U02,U03,U04,U05, U06,U08,U09,K04, K06,K01
TK06	Microbiological diagnostics of skin, bone and joint infections.	2	U02,U03,U04,U05, U06,U08,U09,K04, K06,K01
TK07	Hospital – acquired infections (epidemiological investigation)	2	U02,U03,U04,U05, U06,U08,U09,K04, K06,K01
TK08	Opportunistic infections	1	W01,W02,W03,W02 ,W05,W06,W08,W0 9, W11,W12,W13,W14 ,W15
Virtual simulation			
E-learning			
In accordance with the schedule			

Booklist
Obligatory literature
1. Medical Microbiology – Murray P. R., Rosenthal K. S., Pfaller M.A. – the newest edition
Supplementary literature
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 3. EUCAST – www.eucast.org

Student's workload	
Forms of student 's activity (in class participation; activeness, produce a report, etc.)	Student 's workload [h]
	Tutor
Contact hours with the tutor	70

Time spent on preparation to seminars/practical classes	140
Time spent on reading reccomended literature	70
Time spent on writing report/making a project	-
Time spent on preparing to colloquium/entry test	100
Time spent on preparing to exam	40
Other	
Student ‘s Workload in total	350
ECTS credit for the subject (in total)	7
Remarks	

*Methods of assessment:
ET- test examination
RZC – practical classes report
O – student ‘s active participation and attitude assessment
W – entry test