

Microbiology and oral cavity microbiology with mycology

Educational subject description sheet

Basic information

Organizational unit Faculty of Medicine		Didactic cycle 2020/21	
Field of study Medical and Dental Program		Realization year 2022/23	
Study level long-cycle master's degree program		Lecture languages english	
Study form full-time		Block obligatory for passing in the course of studies	
Education profile general academic		Mandatory obligatory	
Disciplines Medical science		Examination examination	
Subject related to scientific research Yes		Standard groups C. PRECLINICAL SCIENCES, F. SURGICAL CLINICAL SCIENCES	
Subject coordinator		Agata Pietrzyk	
Lecturer		Pełna lista prowadzących dostępna na stronie usosweb.uj.edu.pl w zakładce Katalog → Przedmioty.	
Period Semester 5	Examination examination	Number of ECTS points 3.0	
	Activities and hours seminar: 9 classes: 36		

Goals

C1	Presentation of issues related to microorganisms with particular emphasis on microorganisms that are important in oral cavity infections as well as those that pose a risk in dental practice. Preparing students to solve problems related to oral cavity infections and familiarizing with treatment and prevention options for these infections.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	types and species, as well as the structure of viruses, bacteria, fungi and parasites, their biological properties and pathogenic mechanisms	C.W1	classroom observation, multiple choice test
W2	basics of epidemiology of viral and bacterial infections, fungal and parasitic infections and paths of their spread in the human body	C.W3	multiple choice test
W3	species of bacteria, viruses and fungi which are the most common etiological factors of infections	C.W4	classroom observation, oral answer, multiple choice test
W4	basic principles of disinfection, sterilization and aseptic management	C.W5	classroom observation, multiple choice test
W5	viral, bacterial and fungal flora of the oral cavity and its importance	F.W3	multiple choice test
W6	pathomechanism of the impact of oral diseases on general health	F.W19	oral answer, multiple choice test
W7	basics of antibiotic therapy and antibiotic resistance	F.W13	classroom observation, multiple choice test
W8	principles of therapy for viral, bacterial, fungal and parasitic infections	C.W20	oral answer, multiple choice test
W9	human physiological bacterial flora	C.W2	multiple choice test
W10	the phenomenon of drug resistance development	C.W9	classroom observation
Skills - Student can:			
U1	take an appropriately selected type of biological material for microbiological examination depending on the location and course of the infection	C.U1	classroom observation, multiple choice test
U2	interpret the results of microbiological, serological and antibiogram tests	C.U2	classroom observation, oral answer, multiple choice test
U3	select and perform appropriate tests indicating the number of bacteria in body fluids	C.U3	classroom observation, oral answer, multiple choice test
U4	identify pathological changes caused by HIV infection and observed in patients with acquired immune deficiency syndrome (AIDS)	C.U7	classroom observation, multiple choice test
U5	assess the risk of caries using bacteriological tests and saliva tests	F.U14	classroom observation, multiple choice test
Social competences - Student is ready to:			
K1	formulate conclusions from own measurements or observations	O.K8	classroom observation, oral answer
K2	assume responsibility for decisions taken in the course of their professional activities, including in terms of the safety of oneself and others.	O.K11	multiple choice test
K3	promote health-promoting behaviors	O.K6	multiple choice test

Calculation of ECTS points

Activity form	Activity hours*
seminar	9
classes	36
preparation for examination	30
participation in examination	2
preparation for classes	13
Student workload	Hours 90
Workload involving teacher	Hours 45
Practical workload	Hours 36

* hour means 45 minutes

Study content

No.	Course content	Subject's learning outcomes	Activities
1.	The structure of a bacterial cell, differences in the cell wall structure of Gram-positive and Gram-negative bacteria. Microbiological examination (collection of specimens for microbiological examination, specimen preparation and staining methods, microscopy techniques, culture methods, bacterial identification tests).	W1, W10, U1, U2, K1	classes
2.	Methods of drug susceptibility testing of bacteria and the principles of rational chemotherapy for bacterial infections.	W7, W8, U2, K1	classes
3.	Gram-positive and Gram-negative bacteria important for dentists.	W3, W9, U2, K2	classes, seminar
4.	Flora in gingival sulcus and its participation in periodontal disease. Stages of plaque formation and its role in development of dental caries.	W1, W6, U2, U3, U5, K3	classes
5.	Salivary defense mechanisms, xerostomy complications and microbiological aspects of halitosis.	W5, W6, K3	classes
6.	Disinfection and sterilization of equipment and dental tools.	W4, U2, K1, K2	classes
7.	The structure and characteristics of viruses, techniques of viruses cultivation and identification.	W1, U1	classes
8.	The most important human pathogenic viruses (pathogens of the respiratory tract, mucous membranes and skin, viruses transmitted by blood).	W2, W3, U2, U4, K1, K2	classes

9.	The main antiviral drugs and their use principles.	W1, W8	seminar
10.	Characteristics of human pathogenic fungi, their classification, basics of mycological diagnostics, differences between superficial, organ and systemic mycosis, the main types of fungi involved in these processes.	W1, W3, U1, U2, K1	classes
11.	Basic concepts concerning the epidemiology of parasitic infections. Biological characteristics of parasites and the mechanisms of their pathogenic impact on the human body. Selected protozoan and worm species which are the most common etiological agents of parasitic infections.	W1, W2, U1, U2, K1	classes
12.	The influence of bacterial, fungal and viral diseases of the oral cavity on the general state of human health.	W3, W6, K2	seminar

Course advanced

Teaching methods:

laboratories (labs), e-learning, seminar, lecture, practical classes

Activities	Examination methods	Credit conditions
seminar	oral answer, multiple choice test	Attendance in classes. Active participation in classes, i.e. performing a particular task (exercise) indicated by the teacher. At the end of the course passing the final exam from the material discussed in class (50 multiple choice test questions with one answer correct, 60% needed to pass).
classes	classroom observation, multiple choice test	Attendance in classes (maximum 2 excused absences are allowed); active participation in classes, i.e. performing a particular task (exercise) indicated by the teacher. At the end of the course passing the final exam from the material discussed in class (50 multiple choice test questions with one answer correct, 60% needed to pass).

Additional info

- NB! Please note! Owing to COVID-19 pandemic situation, there may be last minute modifications regarding the syllabus.
- E-learning (ONLINE lectures) will currently replace traditional lectures.
- We are hoping to conduct the labs and seminars at the university facilities.

Literature

Obligatory

1. Lakshman Samaranayake. Microbiology for Dentistry, 5th Edition. Elsevier 2018, ISBN: 978-0702074356

Optional

1. Patrick R. Murray, Ken S. Rosenthal, Michael A. Pfaller. Medical Microbiology, 9th Edition. Elsevier 2020. ISBN: 978-0323673228
2. Gilbert DN, Chambers HF, Saag MS, Pavia AT et al. Sanford Guide to Antimicrobial Therapy 2020. Antimicrobial Inc. 2020

Effects

Code	Content
C.U1	pobierać odpowiednio dobrany rodzaj materiału biologicznego do badania mikrobiologicznego w zależności od umiejscowienia i przebiegu zakażenia
C.U2	interpretować wyniki badań mikrobiologicznych, serologicznych i antybiogramu
C.U3	dobierać i wykonywać właściwe testy wskazujące na liczebność bakterii w płynach ustrojowych
C.U7	określać zmiany patologiczne wywołane zakażeniem wirusem HIV i obserwowane u pacjentów z zespołem nabytego upośledzenia odporności (AIDS)
C.W1	rodzaje i gatunki oraz budowę wirusów, bakterii, grzybów i pasożytów, ich cechy biologiczne i mechanizmy chorobotwórczości
C.W2	fizjologiczną florę bakteryjną człowieka
C.W3	podstawy epidemiologii zakażeń wirusowych i bakteryjnych, zakażeń grzybiczych i pasożytniczych oraz dróg ich szerzenia się w organizmie człowieka
C.W4	gatunki bakterii, wirusów i grzybów będących najczęstszymi czynnikami etiologicznymi zakażeń i infekcji
C.W5	podstawy dezynfekcji, sterylizacji i postępowania aseptycznego
C.W9	zjawisko powstawania lekooporności
C.W20	zasady terapii zakażeń wirusowych, bakteryjnych, grzybiczych i pasożytniczych
F.U14	ocenić ryzyko próchnicy z zastosowaniem testów bakteriologicznych i badań śliny
F.W3	florę wirusową, bakteryjną i grzybiczą jamy ustnej i jej znaczenie
F.W13	podstawy antybiotykoterapii i oporności przeciwanotybiotykowej
F.W19	patomechanizm oddziaływania chorób jamy ustnej na ogólny stan zdrowia
O.K6	propagowania zachowań prozdrowotnych
O.K8	formułowania wniosków z własnych pomiarów lub obserwacji
O.K11	przyjęcia odpowiedzialności związanej z decyzjami podejmowanymi w ramach działalności zawodowej, w tym w kategoriach bezpieczeństwa własnego i innych osób