



48SJO-MICROB
ECTS: 5.00
CYCLE: 2024

Course syllabus - part A Microbiology

SUBJECT MATTER CONTENT

LECTURE

Characteristics and classification of viruses. Viral infections and infectious diseases. The role of viruses in neoplastic diseases, new properties of viruses, diagnostics of viral diseases. Innate and acquired immunity, defense and protective mechanisms against viral infections. Clinical virology - families of human viruses, AIDS and other immune disorders, viral diseases of the skin, viral diseases of the nervous system, sexually transmitted viral diseases, hemorrhagic fevers, Zika virus. Structure and morphology of the bacterial cell. Microflora of the human body. Nature of infectious disease. Basic aspects of bacterial pathogenesis. Virulence factors of bacteria. Pathomechanisms and clinical symptoms associated with pathogenic bacteria. Characteristics of pathogenic Gram (+) and Gram (-) bacteria. Epidemiological problems of infectious diseases.

SEMINAR

Introduction to medical mycology: trophic groups of fungi; ecophysiology of potentially pathogenic fungi; mycoses, mycoallergoses and mycotoxicoses. Types of fungal infections (subdivisions based on location, initial site of infection, number of foci). Factors predisposing to the occurrence of mycosis. Pathomechanism of mycosis. Diagnostic procedure: material for mycological analyses, diagnostic value of direct preparations, immunological tests. Epidemiology of fungal infections. Hospital infections. Prophylaxis of fungal infections. Antifungal drugs.

CLASSES

Principles of microscopy and parts of the microscope construction. Microbiological preparation in microbiological diagnostics. Types of microbiological media and principles of bacterial culture. Growth of bacteria on liquid and solid media. Principles of the reduction culture technique. Microbiological diagnostics of Streptococcus, Staphylococcus, Gram (-) rods. The influence of physical and chemical factors on bacteria. Hand washing and disinfection - monitoring of microbiota. Environmental monitoring of microbiological flora. Anaerobic microorganisms. Mechanisms of bacterial resistance. Methods of testing sensitivity to antibiotics: Plate diffusion method, E-test. Diagnostics of viral diseases. Detection of herpesviruses using PCR - multiplex. Organizational structure and tasks of the Provincial Sanitary and Epidemiological Stations (with particular emphasis on microbiological and virological laboratories).

TEACHING OBJECTIVE

knowledge of biological properties and the principles of microbial classification and their practical consequences related to diagnostics and therapy, as well as the principles of asepsis. Overview of the biology of viruses and bacteria with particular emphasis on the microbial-host relationship, the interaction between microorganisms, their etiology, pathology and epidemiology; acquainting with the principles of microbiological diagnostics along with a molecular biology immunological methods; developing the ability to collect material, select methods and

Legal acts specifying learning outcomes:
467/2024

Disciplines: medical sciences

Status of the

course:Obligatoryjny

Group of courses:A -

przedmioty podstawowe

Code: ISCED 0912

Field of study:Medicine

Scope of education:

Profile of education:

General academic

Form of studies: full-time

Level of studies: uniform

master's studies

Year/semester: /2

Types of classes: Lecture,
Seminar, Classes

Number of hours in

semester:Lecture: 15.00,

Seminar: 10.00, Classes:

30.00

Language of

instruction:English

Introductory subject:

medical biology, biochemistry,

physiology, histology

Prerequisites: knowledge of

the principles of organic and

inorganic chemistry,

biochemistry, physiology,

histology and the basics of

genetics

Name of the organisational unit conducting the

course:Katedra Fizjologii i

Patofizjologii Człowieka

Person responsible for the

realization of the course:dr

Adam Osowski, prof. dr hab.

wet. Mariusz Majewski

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Additional remarks:

interpret the results; principles of aseptic procedures, disinfection, sterilization with particular emphasis on nosocomial infections pathology and epidemiology.

DESCRIPTION OF THE LEARNING OUTCOMES OF THE COURSE IN RELATION TO THE DESCRIPTION OF THE CHARACTERISTICS OF THE SECOND LEVEL LEARNING OUTCOMES FOR QUALIFICATIONS AT LEVELS 6-8 OF THE POLISH QUALIFICATION FRAMEWORK IN RELATION TO THE SCIENTIFIC DISCIPLINES AND THE EFFECTS FOR FIELDS OF STUDY:

Symbols for outcomes related to the discipline:

M/NMA_P7S_WG+++ , M/NMA_P7S_UW++ ,
M/NMA_P7S_KO+++

Symbols for outcomes related to the field of study:

C.W15.+ , C.W11.+ , C.W12.+ , C.W13.+ ,
C.W10.+ , C.W9.+ , K.5+ , C.U5.+ , C.W14.+ ,
C.W17.+ , K.8.+ , C.U6.+ , K.7.+

LEARNING OUTCOMES:

Knowledge:

W1 - knows the genetic mechanisms of acquiring drug resistance by microorganisms and cancer cells and their relationship with the need to individualize pharmacotherapy;

W2 - classifies microorganisms, taking into account pathogenic ones and those constituting the human microbiome, as well as forms or development stages of selected parasites that are invasive to humans;

W3 - knows the epidemiology of infections caused by viruses, bacteria, fungi and prions and parasitic infections, taking into account the geographical range of their occurrence;

W4 - knows the pathogenesis and pathophysiology of infections and contagions and the impact of pathogenic factors such as viruses, bacteria, fungi, prions and parasites on the human body and the population, including the ways in which they affect, the consequences of exposure to them and the principles of prevention;

W5 - knows the consequences of exposure of the human body to chemical and physical factors and the principles of prevention;

W6 - knows the etiology, pathogenesis, pathophysiology, routes of transmission, forms and prevention of iatrogenic infections;

W7 - knows the methods used in microbiological and parasitological diagnostics (indications, principles of performance, interpretation of results);

W8 - knows the principles of disinfection, sterilization and aseptic procedures;

Skills:

U1 - can recognize pathogens under a microscope;

U2 - is able to interpret the results of microbiological tests;

Social competence:

K1 - has the ability to notice and recognize one's own limitations and to self-assess educational deficits and needs;

K2 - uses objective sources of information;

K3 - makes conclusions based on own measurements or observations;

TEACHING FORMS AND METHODS:

Lecture(W1;W2;W3;W4;W5;W6;W7;K1;K2;):ppt presentations

Seminar(W1;W2;W3;W4;W5;W6;W7;U2;K1;K2;):ppt presentations

Classes(W1;W2;W3;W4;W5;W6;W7;W8;U1;U2;K1;K2;K3;):practical-theoretical classes

FORM AND CONDITIONS OF VERIFYING LEARNING OUTCOMES:

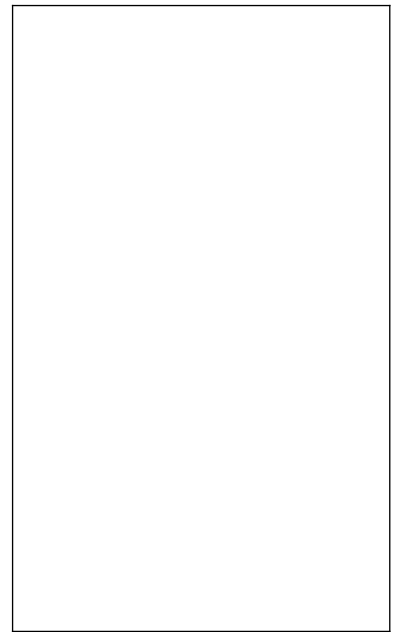
Lecture (Exam) - MCQ -
Seminar (Colloquium test) - MCQ -
Seminar (Presentation) - preparation of ppt presentations on a given topic -
Classes (Colloquium test) - MCQ -
Classes (Oral test) - oral answer -

BASIC LITERATURE:

1. Murray P.R., Rosenthal K.S., Pfaller M.A., *Medical Microbiology*, Wyd. Elsevier, R. 2009

SUPPLEMENTARY LITERATURE:

1. Baumann R.W., *Microbiology with diseases by body system*, Wyd. Financial Times Prentice Hall, R. 2017
2. Burrell C.J., Howard C.R., Murphy F. A., *Fenner and White's Medical Virology*, Wyd. Elsevier, R. 2016
3. Wang-Shick R., *Molecular Virology of Human Pathogenic Viruses*, Wyd. Elsevier, R. 2016



Detailed description of ECTS credits awarded - part B

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Microbiology

The number of ECTS credits awarded consists of:

1. Contact hours with the academic teacher:

- participation in: Lecture	15.0 h
- participation in: Seminar	10.0 h
- participation in: Classes	30.0 h
- consultation	4.0
	Total: 59.0 h.

2. Independent work of a student:

preparation for laboratory classes	24.00 h
preparation for seminars	12.00 h
preparation for the exam	30.00 h

Total: 66.0 h

contact hours + independent work of a student Total: 125.0 h

1 ECTS credit = 25-30 h of an average student's work, number of ECTS credit = 125.0 h : 25.0 h/ECTS = 5.00 ECTS on average: 5.0 ECTS

- including the number of ECTS credits for contact hours with the direct participation of an academic teacher: 0,00 ECTS points,

- including the number of ECTS credits for hours of independent work of a student: