UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN
Faculty of Medicine

Course sylabus – part A
Microbiology

48SJ-MIC
ECTS: 4.00
CYCLE: 2023L

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. Congenital and acquired immunity, defense and protective mechanisms against viral infections. Clinical virology - families of human viruses, AIDS and other immune disorders, viral skin diseases, viral diseases of the system nervous diseases, sexually transmitted viral diseases, hemorrhagic fever, Zika virus. Structure and morphology of a bacterial cell. The microflora of the human body. The nature of the disease infectious. Basic aspects of bacterial pathogenesis. Factors of bacterial virulence. Pathomechanisms and clinical symptoms associated with pathogenic bacteria. Characteristics of pathogenic bacteria Gram (+) and Gram (-). 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 (subdivision according to location, initial place of infection, number of foci). Factors predisposing to the occurrence of mycosis. Pathomechanism of mycosis. Diagnostic process: material for mycological analyses, diagnostic value of direct preparations, immunological tests. Epidemiology of mycoses. Hospital infections. Prevention of mycosis. Antifungal drugs.

CLASSES
Principles of microscopy and parts of the microscope structure. Microbiological preparation in microbiological diagnostics. Types of backing microbiological and bacterial culture principles. Bacterial growth on liquid and solid media. Principles of the reduction inoculation technique. Microbiological diagnosis of Streptocossus, Staphylococcus, Gram (-) bacilli. Influence of physical and chemical factors on bacteria. Hand washing and disinfection - monitoring of the microbial flora. Environmental monitoring of microbial flora. Anaerobic microorganisms. Mechanisms of bacterial resistance. Antibiotic susceptibility testing methods: Plate diffusion method, E-test. Diagnosis of viral diseases. Detection of Herpesviruses using PCR - multiplex. Organizational structure and tasks of 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

Legal acts specifying learning outcomes: 3112022
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: 2/4

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
e-mail: mariusz.majewski@uwm.edu.pl adam.osowski@uwm.edu.pl

Additional remarks:

methods; developing the ability to collect material, select methods and 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:

Symbols for outcomes related to the field of study:

LEARNING OUTCOMES:

Knowledge:

W1 – knows the genetic mechanisms of acquiring drug resistance by microorganisms and neoplastic cells;
W2 – classifies the pathogenic microorganisms and present those in the physiological flora;
W3 – knows the epidemiology of infections with viruses, bacteria, fungi and parasites, including the geographical range of their occurrence;
W4 – knows the influence of biotic (bacteria, viruses) abiotic environmental factors on the human body and the population as well as the routes of entry of pathogens into the human body; describes the consequences of exposing the body to various chemical biological factors and the principles of their prophylaxis;
W5 – knows the basics of disinfection, sterilization and aseptic procedures; knows and understands the symptoms of iatrogenic infections their pathways; knows pathogens which cause changes in particular organs;

Skills:

U1 – assesses the environmental threats and uses basic detection methods to show the presence of harmful and biological factors in the biosphere;
U2 – is able to prepare a slide and recognize pathogens under the microscope;
U3 – interprets the results of microbiological tests;

Social competence:

K1 – is aware of her/his own limitations and of the need for continuous increasing the knowledge;
K2 – is able to use objective sources of information;
K3 – formulates conclusions from his/her own measurements or observations;

TEACHING FORMS AND METHODS:

Lecture(W1;W2;W3;W4;U1;K1;):ppt presentations
Seminar(W3;W4;K1;K2;):ppt presentations
Classes(W4;W5;U1;U2;U3;K1;K2;K3;):practical-theoretical classes

FORM AND CONDITIONS OF VERIFYING LEARNING OUTCOMES:

Lecture (Exam) - MCQ -
Seminar (Colloquium test) - MCQ -
Seminar (Prezentation) - 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. Burrel 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

48SJ-MIC
ECTS: 4.00
CYCLE: 2023L

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	5.0
	Total: 60.0 h.

2. Independent work of a student:

preparation for laboratory classes	14.00 h
preparation for seminars	6.00 h
preparation for the exam	20.00 h

Total: 40.0 h

contact hours + independent work of a student Total: 100.0 h

1 ECTS credit = 25-30 h of an average student’s work, number of ECTS credit = 100.0 h : 25.0 h/ECTS = 4.00 ECTS on average: 4.0 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: