

Microbiology with immunology - opis przedmiotu

Informacje ogólne	
Nazwa przedmiotu	Microbiology with immunology
Kod przedmiotu	13.4-WB-P-MzI-S21
Wydział	Wydział Nauk Biologicznych
Kierunek	WNB - oferta ERASMUS
Profil	-
Rodzaj studiów	Program Erasmus
Semestr rozpoczęcia	semestr zimowy 2022/2023

Informacje o przedmiocie	
Semestr	2
Liczba punktów ECTS do zdobycia	7
Typ przedmiotu	obowiązkowy
Język nauczania	angielski
Sylabus opracował	- prof. dr hab. Michał Stosik - dr Sylwia Andrzejczak-Grządko

Formy zajęć					
Forma zajęć	Liczba godzin w semestrze (stacjonarne)	Liczba godzin w tygodniu (stacjonarne)	Liczba godzin w semestrze (niestacjonarne)	Liczba godzin w tygodniu (niestacjonarne)	Forma zaliczenia
Laboratorium	45	3	-	-	Zaliczenie na ocenę
Wykład	30	2	-	-	Zaliczenie

Cel przedmiotu

The acquisition of theoretical and practical knowledge by the student, as a result of which the student should describe: biological and physiological functions of bacteria and fungi; metabolic processes and their regulation in the mentioned organisms; possibilities of using the biological potential of bacteria and fungi in biotechnology; biological properties and regulatory functions of viruses. The aim of the course is also to get to know the structure and biological functions of the immune system. The student should explain the essence and regulatory mechanism of defense reactions conditioned by elements of non-specific and specific immunity mechanisms.

Within the laboratory classes the student should learn the basic principles of safe work in a biological laboratory, master the culture techniques used in microbiology, basic experimental and laboratory techniques used in immunology.

Wymagania wstępne

Knowledge of basic biology, chemistry, biochemistry.

Zakres tematyczny

Lecture: The place of microorganisms in the world of living organisms. Structure and function of bacterial cell. Metabolic processes in bacteria and mechanisms of their regulation. Genetics of bacteria. Bacteria in biosphere. Interaction of bacteria. Viruses and their biological properties. Fungi and their biological properties. Pathogenic microorganisms for plants, animals and humans. Structure of immune system. Nonspecific immunity. Specific immunity. Immune response of humoral type. Immune response of cellular type. Regulation of immune response. Evolution of immunity.

Laboratory activities: Microscopic observations. Size and shape of microorganisms. Gram staining. Complex staining - structural elements of bacteria. Sterilization. Microbiological media. Culture techniques. Isolating bacteria and obtaining pure cultures. Determination of bacteria number. Effects of physical and chemical factors on bacteria. Methods of studying biochemical properties of bacterial cells. Isolation and observation of immune cells. Antigen-antibody reactions (precipitation, complement fixation, immunofluorescence, immunodiffusion, immunoenzymatic ELISA test). Methods for determining complement. Methods of measuring effector functions of immune cells (migration, adherence, engulfment, intracellular killing, metabolic activity).

Metody kształcenia

- feeding method (lecture in the form of multimedia presentation),

- practical (laboratory exercises using classical and molecular techniques used in microbiological studies)

Efekty uczenia się i metody weryfikacji osiągnięcia efektów uczenia się

Opis efektu	Symbole efektów	Metody weryfikacji	Forma zajęć
explains the principles of using techniques used in microbiological research, has knowledge of the use of laboratory equipment in a microbiological laboratory		test	Laboratorium

Opis efektu	Symbole efektów	Metody weryfikacji	Forma zajęć
uses literature sources, also electronic ones, can interpret and combine information obtained in a coherent way, uses self-learning methods and sees the need to learn and improve your cognitive skills; is aware of dynamic changes in knowledge, takes care of updating it		• test • test końcowy	• Wykład • Laboratorium
works in a group and organizes work in a specific area		• test	• Laboratorium
apply the principles of safe work in the laboratory; plans and conducts an experiment; He can use the researched techniques (biological material preparation, microscopic analysis); interprets and draws conclusions; He can use the acquired skills in the professional environment and in other environments		• test	• Laboratorium
knows and understands the basics of general microbiology in the field of bacteriology, virology and mycology		• test końcowy	• Wykład • Laboratorium

Warunki zaliczenia

Lecture - final exam, which the student is admitted on the basis of the prior pass of the laboratory classes. Exam: I term - written form - 50 question test, further deadlines – oral. Exam time - 90 min. Rating - satisfactory - over 60% of all points.

Laboratory - knowledge tests (closed and open) - positive score over 60% of points obtained and practical skills test. Final score is the arithmetic mean of the partial scores.

Literatura podstawowa

1. Basic Practical Microbiology. Society for General Microbiology 2006
2. Essential Microbiology. S. Hogg. John Wiley & Sons Ltd. 2005
3. Medical microbiology. P. Murray, K. Rosenthal, M. Pfaller. Elsevier. 2016
4. Textbook of microbiology. C.K.J. Paniker. Orient Longman. 2005
5. Laboratory Manual and Workbook in Microbiology. J. A. Morello, P. A. Granato, H. E. Mizer. The McGraw-Hill Companies, 2003

Literatura uzupełniająca

1. Microbiology. M. Sattley, M.T. Madigan. John Wiley & Sons, Ltd. 2015

Uwagi

Zmodyfikowane przez dr Sylwia Andrzejczak-Grządko (ostatnia modyfikacja: 08-05-2022 17:45)

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