Załącznik nr 5 do dokumentacji programowej

KARTA PRZEDMIOTU

I. Dane podstawowe

Nazwa przedmiotu	Mikrobiologia medyczna
Nazwa przedmiotu w języku angielskim	Medical microbiology
Kierunek studiów	Biotechnologia
Poziom studiów (I, II, jednolite magisterskie)	I
Forma studiów (stacjonarne, niestacjonarne)	stacjonarne
Dyscyplina	mikrobiologia
Język wykładowy	Grupy w języku polskim – język polski Grupy w języku angielskim – język angielski

Koordynator przedmiotu/osoba odpowiedzialna	Dr Monika Jach

Forma zajęć *(katalog zamknięty ze słownika)*	Liczba godzin	semestr	Punkty ECTS
wykład	30	IV	6
konwersatorium			
ćwiczenia	30	IV	
laboratorium			
warsztaty			
seminarium			
proseminarium			
lektorat			
praktyki			
zajęcia terenowe			
pracownia dyplomowa			
translatorium			
wizyta studyjna			

Wymagania wstępne	Knowledge in the field of: general microbiology and biochemistry with enzymology

II. Cele kształcenia dla przedmiotu

Upon completion of this course students will be able to describe: how the biology of bacteria and fungi leads to human disease; and how humans try to prevent or treat these diseases.
Students will be able to explain the rules by microbiologists to identify and characterize organisms.
Acquainting with the principles of microbiological testing, including isolation and identification of microorganisms
The acquisition of skills by the student perform the microbiological examination, including the isolation and identification of microorganisms

III. Efekty kształcenia dla przedmiotu wraz z odniesieniem do efektów kierunkowych

Symbol	Opis efektu przedmiotowego	Odniesienie do efektu kierunkowego
WIEDZA		
W_01	students know the basic terminology used in microbiology, understand and can define the basic phenomena and processes of physiological and pathological forms of intercourse microorganisms	K_W01
W_02	students have a basic knowledge of the most important groups of microorganisms that cause human infection and their pathogenic potential and their practical impact on various industries	K_W02
W_03	students have knowledge of the principles of planning and development of microbiological tests using the research techniques and tools used in microbiology	K_W05, K_W06
W_04	students have knowledge of the basic principles of safety, occupational hygiene and ergonomics, indicate the psychophysical abilities of a man in the work environment	K_W09
UMIEJĘTNOŚCI		
U_01	students use and implement research techniques and tools including the identification and differentiation of microorganisms. Students use the acquired knowledge and apply in practice the regime of dealing with infectious material	K_U01, K_U02, K_U05
U_02	students are able to use a light microscope, prepare microscopic specimens himself, conduct and document microscopic observations	K_U03
U_03	students will conduct a classic procedure to identify basic pathogens, collect and interpret the results of diagnostic tests and on this basis formulate appropriate conclusions, can prepare a report	K_U01, K_U05
U_04	students learn independently in a targeted manner in the field covering the issues of medical microbiology	K_U07
U_05	Students understand and use scientific literature in the field of medical microbiology in English, can name, explain, identify, distinguish and define the most important groups of microorganisms that cause human infection	K_U08, K_U09
U_06	students prepare a written study of issues related to medical microbiology in English using the scientific language	K_U10
KOMPETENCJE SPOŁECZNE		
K_01	students understand the need for continuous deepening and updating knowledge and skills related to the microbiological field, they are open to the use of new microbiological techniques	K_K01
K_02	students show care for entrusted equipment, respect for his or her own work and others, show readiness for team-solving tasks and substantive discussion	K_K02
K_03	students follow the principles of occupational health and safety and ethics, using effectively the microbiological method of	K_K03

	destroying microorganisms outside the human body in practice, demonstrate responsibility for the assessment of hazards resulting from the applied research techniques, know how to proceed in states of risk	
K_04	students understand the dilemmas associated with the development of microbiology of pathogens and the social and economic significance of pathogenic microorganisms. They are aware of ethical conduct during planning and performing research experiments	K_K05

IV. Opis przedmiotu/ treści programowe

Students are familiar with the safety rules in microbiological laboratory: principles of laboratory organization and conditions of safe work in the laboratory. Review and current systematics of the most important pathogenic microorganisms; including obligatory and opportunistic pathogens - morphology, identification, virulence factors and pathogenicity, laboratory diagnosis, culture conditions, identification, growth characteristics, monitoring pigments. Basics of differentiation and methods of microbial cultures. Detailed diagnostics of selected pathogens by traditional and molecular methods. Isolation and identification of microorganisms, sensitivity to antibiotics and resistance mechanisms, serological reactions. Students are introduced to the issue of indirect diagnosis of infectious diseases using the most significant methods. They read the results of the methods and interpret them. Microbiological safety of drugs, foodstuffs, water and air, including microbiological purity testing methods.

Topics of Medical Microbiology exercises
Exercise 1. Theoretical and practice explanation of organisation of work and occupational health and safety regulations applicable in microbiological laboratory.
Exercise 2. Differentiation and identification of Staphylococcus species.
Exercise 3. Differentiation and identification of Streptococcus and Enterococcus
Exercise 4. Written test covering exercises 1-3.
Exercise 5. Non-spore-forming Gram-positive rods, if always threatening the health and life? Listeria and Lactobacillus
Exercise 6. Differentiation and identification of aerobic bacilli - Bacillus
Exercise 7. The clinical significance of aerobic gram-negative rods Pseudomonas and related bacteria.
Exercise 8. Written test covering exercises 5-7
Exercise 9 Isolation and identification of Enterobacteriaceae.
Exercise 10. Anaerobic bacilli – Clostridium
Exercise 11. Yeast infections. Candida and Cryptococcus neoformans
Exercise 12. Written test covering exercises 9-12.
Exercise 13-14. Microbiological safety of medicines, foods, water and air, including the methods of microbiological purity. Practical test.
Exercise 15. Summary and closing exercises.

V. Metody realizacji i weryfikacji efektów kształcenia

Symbol efektu	Metody dydaktyczne *(lista wyboru)*	Metody weryfikacji *(lista wyboru)*	Sposoby dokumentacji *(lista wyboru)*
WIEDZA			
W_01	Conventional lecture discussion	exam written test	Evaluated written paper Evaluated written test

W_02	Conventional lecture discussion	exam written test	Evaluated written paper Evaluated written test
W_03	Conventional lecture discussion	exam written test	Evaluated written paper Evaluated written test
W_04	discussion	written test	Evaluated written test
UMIEJĘTNOŚCI			
U_01	Laboratory classes	Written test	Evaluated written test
U_02	Laboratory classes	Written test	Evaluated written test
U_03	Laboratory classes	written test report	Evaluated written test Report printout
U_04	Laboratory classes	Written test	Evaluated written test
U_05	Laboratory classes	Written test	Evaluated written test
U_06	Laboratory classes	written test report	Evaluated written test Report printout
KOMPETENCJE SPOŁECZNE			
K_01	Laboratory classes	Test of practical skills	Rating card
K_02	Laboratory classes	Test of practical skills	Rating card
K_03	Laboratory classes	Test of practical skills	Rating card
K_04	Laboratory classes	Test of practical skills	Rating card

VI. Kryteria oceny, wagi

Ustalanie oceny zaliczeniowej na podstawie ocen cząstkowych otrzymywanych przez studenta w czasie trwania zajęć:
Exam
100% mark from an exam
Classes
80% mark from written tests and written short tests
10% written reports of the exercises
10% assessment of work during the classes

Mark	**Evaluation criteria**	
verygood (5)	the student realizes the assumed learning outcomes at a very good level	the student demonstrates knowledge of the education content at the level of 91-100%
overgood (4.5)	the student accomplishes the assumed learning outcomes an over good level	the student demonstrates knowledge of the education content at the level of 86-90 %
good(4)	the student accomplishes the assumed learning outcomes at a good level	the student demonstrates knowledge of the education content at the level of 71-85%
Quite good(3.5)	the student accomplishes the assumed learning outcomes at a quite good level	the student demonstrates knowledge of the education content at the level of 66-70%
sufficient (3)	the student accomplishes the assumed learning outcomes at a sufficient	the student demonstrates knowledge of the education content at the level of 51-65%

	level	
insufficient (2)	the student accomplishes the assumed learning outcomes at an insufficient level	the student demonstrates knowledge of the education content below the level of 51%

VII. Obciążenie pracą studenta

Forma aktywności studenta	Liczba godzin
Liczba godzin kontaktowych z nauczycielem	60
Liczba godzin indywidualnej pracy studenta	90

VIII. Literatura

Grupy w języku polskim

Literatura podstawowa
Szewczyk E.M. Diagnostyka bakteriologiczna. PWN Irving W, T.Boswell,D.Ala'Aldeen, Mikrobiologia medyczna. Krótkie wykłady. Warszawa
Literatura uzupełniająca
Kędzia W. Materiały do ćwiczeń z mikrobiologii farmaceutycznej. PZWL Murray P.R., Rosenthal K.S. Pfaller M.A. pod red. Przondo-Mordarska A. Martirosian G., Szkaradkiewicz A. Mikrobiologia Medyczna. Wyd. Elsievier Urban i Partner, Wrocław; Kayser F.H., Bienz K.A., Eckert J., Zinkernagel R.M. Mikrobiologia lekarska, PZWL; Zaremba M.L., Borowski J. Mikrobiologia lekarska PZWL; Virella G., Mikrobiologia i choroby zakaźne, Wyd.Med. Urban i Partner 0; Choroszy-Król I., Fleischer M. Przewodnik do ćwiczeń z mikrobiologii lekarskiej Wyd. AM Wrocław.

Grupy w języku angielskim

Literatura podstawowa
Murray P.R., Rosenthal K.S. Pfaller M.A. Medical Microbiology. Elsevier Inc. Philadelphia
Literatura uzupełniająca
Baron S. (ed.) Medical Microbiology. University of Texas Medical Branch at Galveston, Galveston, Texas. Jorgensen J.H., Pfaller M.A., Carroll K.C., Funke G., Landry M.L., Richter S.S., Warnock D.W. Manual of Clinical Microbiology. Am. Society Microbiology