Załącznik nr 5 do dokumentacji programowej

KARTA PRZEDMIOTU

I. Dane podstawowe

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

Koordynator przedmiotu/osoba odpowiedzialna	Dr Monika Janeczko

Forma zajęć *(katalog zamknięty ze słownika)*	Liczba godzin	semestr	Punkty ECTS
wykład	30	III	6
ćwiczenia	30	III	

Wymagania wstępne	knowledge in biology at the high school level

II. Cele kształcenia dla przedmiotu

1. Structure and physiology of microorganisms
2. Metabolic diversity and types of nutrients of microorganisms.
3. Taxonomy and diagnostics of microorganisms
4. Principles of working with microbiological material; with microscopy techniques, dyeing, growing and biochemical differentiation

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

Symbol	Opis efektu przedmiotowego	Odniesienie do efektu kierunkowego
WIEDZA		
W_01	Student understands basic phenomena concerning the role of microorganisms in the environment	K_W01
W_02	Student has the basic knowledge of microbiology required for practical use in biotechnological processes which are applied in food and pharmaceutical industry as well as in agriculture	K_W02
W_03	Student has basic knowledge of microbiology required to understand and interpret basic natural phenomena and processes	K_W03
W_04	Student has knowledge in terms of basic laboratory techniques applying microorganisms and research tools used in microbiology, structure and physiology of the most important microorganims	K_W06

	and their role in environment	
UMIEJĘTNOŚCI		
U_01	Student applies basic techniques and research tools in microbiology	K_U01
U_02	Student carries out observations and performs basic physical, chemical and biological measurements	K_U02
U_03	Student is able to use light microscope, independently prepares microscopic preparations; is able to carry out and document microscopic observations	K_U03
U_04	Student is able to conduct the cell and tissue cultures from microorganisms origin	K_U04
U_05	Student designs and/or carry out basic research tasks or evaluations in the field of microbiology	K_U05
U_06	Student learns single-handedly in a targeted manner of issues related to microbiology	K_U07
KOMPETENCJE SPOŁECZNE		
K_01	Student understands the need to continuous deepening and updating of knowledge and skills, is open to the use of new research techniques	K_K01
K_02	Student takes care of entrusted equipment, respects own and others work, shows a willingness to solve the tasks collectively and to substantive discussion	K_K02
K_03	possesses appropriate habits required to the work in scientific laboratories especially in aseptic conditions, proceeds according to work safety regulations, knows about behaviour in danger	K_K03

IV. Opis przedmiotu/ treści programowe

The structure of the cell and sub cellular of prokaryotes with respect to the eukaryotic cell. Systematic (by classification artificial) overview of the main groups of microorganisms (viruses, bacteria and fungi). Discussion of their morphology, metabolism (specific metabolic pathways) and the environment of the cell wall. The organization and functioning of the prokaryotic genome. Molecular basis of taxonomy and microbiological diagnostics. The influence of the environment on the bacteria. Participation in the formation of microbial biosphere - participation in the circulation of carbon, oxygen, hydrogen, sulfur, nitrogen and other elements of nature.
the biotechnological application of microorganisms in industry and medicine. The microscopes - construction and types of microscopes, the morphology of bacterial cells and their characteristic grouping. Fundamentals of staining microorganisms. The composition and classification of microbiological culture media and sterilization. Cultures of microorganisms. The pure bacterial cultures and the overall strategy of microbiological diagnostics. The impact of physical and chemical factors on microorganisms - including the theoretical basis of antibiotic resistance.

V. Metody realizacji i weryfikacji efektów kształcenia

Symbol efektu	Metody dydaktyczne *(lista wyboru)*	Metody weryfikacji *(lista wyboru)*	Sposoby dokumentacji *(lista wyboru)*
WIEDZA			

W_01 W_02 W_03 W_04	Conventional lecture Laboratory analysis Laboratory classes	Exam Observation, report	Written Test, Report, Exam
UMIEJĘTNOŚCI			
U_01 U_02 U_03 U_04 U_05 U_06	Laboratory analysis, Laboratory classes, Practical classes	Observation, report	Written Test, Report, Exam
KOMPETENCJE SPOŁECZNE			
K_01 K_02 K_03	Laboratory analysis, Laboratory classes	Observation, report	Written Test, Report, Exam

VI. Kryteria oceny, wagi

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%
quitegood(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 sufficientlevel	the student demonstrates knowledge of the education content at the level of 51-65%
insufficient (2)	the student accomplishes the assumed learning outcomes at an insufficientlevel	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
K. Graeme-Cook, R. Killington, J. Nicklin Krótkie wykłady Mikrobiologia, **Wydawnictwo Naukowe PWN** **Schlegel Hans G. Mikrobiologia ogólna, Wydawnictwo Naukowe PWN** **W. J. H. Kunicki-Goldfinger** Życie bakterii, **Wydawnictwo Naukowe PWN**
Literatura uzupełniająca
Różalski A. 1998. Ćwiczenia z mikrobiologii ogólnej. Wydawnictwo Uniwersytetu Łódzkiego, Łódź. Kocwowa E. 1981. Ćwiczenia z mikrobiologii ogólnej. Wyd. Nauk. PWN, Warszawa.

Grupy w języku angielskim

Literatura podstawowa
Instatnt Notes Microbiology, K. Graeme-Cook, R. Killington, J. Nicklin ; Scripts
Literatura uzupełniająca
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