Karta przedmiotu / Course description

Informacje ogólne o przedmiocie / General information about the course	
1. Kierunek studiów / Major of study: **Medical biotechnology**	**2. Poziom kształcenia / Study level:** bachelor degree **3. Forma studiów / Form of study:** full-time study
4. Rok / Year: II	**5. Semestr / Semester: IV**
6. Nazwa przedmiotu / Course name: BIOCHEMICAL TECHNOLOGY	
7. Status przedmiotu / Course status: obligatory	
8. Jednostka realizująca przedmiot, adres, e-mail: **Name of Department, mailing address, e-mail:** **Department of Biotechnology and Genetic Engineering; Jednosci 8 Street; 41-200 Sosnowiec** **ibednarek@sum.edu.pl**	
9. Treści programowe przedmiotu Course contents: To learn and understand the potential applications of living organisms in biotechnology, both whole organisms and the products of their metabolism. To characterize the production potential of organisms. Application of basic techniques to design, conduct and evaluate bioprocesses (at laboratory scale). Use different types of technology (e.g. biosynthesis, biotransformation, etc.) to obtain a bioproduct of a given type.	
10. liczba godzin z przedmiotu / Number of hours for the course	**90**
11. liczba punktów ECTS dla przedmiotu / Number of ECTS points for the course	**6**
12. Formy i tematy zajęć / Forms and topics of classes	**Liczba godzin** **Number of hours**
12.1. Lectures	
Characteristics of industrial micro-organisms The scale of biotechnological processes. Characteristics of bioprocess flow and bioprocessing methods. Types of cultures. Viability assessment of bioreactor cultures Forms of bioproducts. Extraction and purification of bioproducts. Microbial biomass production as an example of a bioprocess	**15**
12.2. Seminars	
Isolation, selection and storage of industrial strains. Technological basis of microbial culture. Kinetics of microbial growth. Characteristics and biotechnological significance of bacteria of the genus *Bacillus*. Filamentous fungi and acetic bacteria: biotechnological production of organic acids. Biodegradable bacterial polymers - biosynthesis and applications.	**15**
12.3 Laboratory classes	
Study of amylase and extracellular protease activities in cultures of *Bacillus cereus* Biosynthetic processes in biotechnology: production of dextran by the bacteria *Leuconostoc mesenteroides* Organic acid production: determination of citric acid in *Aspergillus niger* cultures Immobilization of yeast cells and its practical application . Culture and microscopic analysis of industrial yeast strains Biosynthesis and amino acid overproduction in the culture of *Corynebacterium glutamicum*	**60**

13. Literatura / Readings

1. INTRODUCTION TO BIOTECHNOLOGY AND GENETIC ENGINEERING. Rev. ed. of: Principles of biotechnology. Nair, A. J. ISBN-13: 978-1-934015-16-2
2. Molecular biotechnology : principles and applications of recombinant DNA B. R. Glick, J. J. Pasternak, and C. L. Patten. ISBN 978-1-55581-498-4
3. Biotechnology Procedures and Experiments Handbook. S. Harisha ISBN: 978-1-934015-11-7
4. Originally papers
5. Lecture notes

14. Kryteria oceny – szczegóły / Detail evaluation criteria

Zgodnie z zaleceniami organów kontrolujących / In accordance with the recommendations of the inspection bodies

Zaliczenie przedmiotu - student osiągnął zakładane efekty uczenia się / Completion of the course – student has achieved the assumed learning outcomes

Szczegółowe kryteria zaliczenia i oceny z przedmiotu są zamieszczone w regulaminie przedmiotu / Detail criteria for completion and evaluation of the course are specified in the course regulations