

Karta przedmiotu / Course description

Informacje ogólne o przedmiocie / General information about the course	
1. Kierunek studiów / Major of study: Pharmacy	2. Poziom kształcenia / Study level: Uniform Master's Program
4. Rok / Year: V	3. Forma studiów / Form of study: intramural
6. Nazwa przedmiotu / Course name: Drug form technology III	5. Semestr / Semester: IX
7. Status przedmiotu / Course status: required	
8. Jednostka realizująca przedmiot, adres, e-mail: Name of Department, mailing address, e-mail: Department of Biopharmacy, 8 Jedności Str., 41-200 Sosnowiec, (32) 364 12 49, e-mail: janusz.kasperczyk@sum.edu.pl	
9. Treści programowe przedmiotu Course contents: Acquainting students with new drug formulation technologies, and synthesis of controlled or extended release systems for drugs used in various therapies, especially in targeted therapies. The use of lipid and polymeric materials as carriers of active substances. Understanding various modifications of drug formulation and the resulting possibility of controlling the kinetics of active substance release. Getting to know the achievements of nanotechnology and the possibilities of their application in pharmacy. Learning outcomes/ reference to learning outcomes indicated in the standards: for knowledge - student knows and understands: C.W15, C.W25, C.W26, C.W30, C.W32, C.W29, C.W47, C.W24, C.W40, C.W46, C.W35, C.W6, C.W34, C.W39; for skills student can do: C.U15, C.U19, C.U22, C.U24, C.U7, C.U24, C.U25, C.U27, C.U28, C.U34, C.U27, C.U28; for social competences student is ready to: formulate conclusions from his/her own measurements or observations.	
10. liczba godzin z przedmiotu / Number of hours for the course	20h
11. liczba punktów ECTS dla przedmiotu / Number of ECTS points for the course	2
12. Formy i tematy zajęć / Forms and topics of classes	Liczba godzin Number of hours
12.1. Seminars 1. Polymeric nanoparticles as drug carriers – nanoparticle generations, relationships between chemical characteristics of the nanoparticle surface and its fate in the body. 2. Vesicles and dendrimers in pharmacy.	2h 3h
12.2 Laboratory classes 1. Preparation of microspheres composed of alginate and coated with cellulose acetate phthalate. The use of mesalazine as a model drug. 2. Preparation of microspheres based on a mucoadhesive, semi-natural material - chitosan. Incorporation of 5-aminosalicylic acid, as a model therapeutic substance, into microspheres. 3. The evaluation of 5-ASA release from alginate and chitosan microspheres under different environmental conditions.	5h 5h 5h

13. Literatura / Readings

1. Sun T, Zhang YS, Pang B, Hyun DC, Yang M, Xia Y. Engineered nanoparticles for drug delivery in cancer therapy. *Angew Chem Int Ed Engl.* 2014; 53(46): 12320-12364.
2. Rideau E, Dimova R, Schwille P, Wurm FR, Landfester K. Liposomes and polymerosomes: a comparative review towards cell mimicking. *Chem Soc Rev.* 2018; 47: 8572-8610.
3. Santos A, Veiga F, Figueiras A. Dendrimers as Pharmaceutical Excipients: synthesis, properties, toxicity and biomedical applications. *Materials (Basel).* 2020; 13(1): 65.

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*