

1.	Field of study	Biophysics
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2023/2024 (winter term), 2024/2025 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	General information about the module	
Module name		Manipulation of the Physical State, Drug Characterization and Formulation
Module code		W4-BF-FA-S1-5-23-29A
Number of the ECTS credits		3
Language of instruction		Polish
Purpose and description of the content of education		The module is designed to familiarize the student with the basic concepts and laws in the field of manipulation of the physical state of a drug substance in order to improve its water solubility, release profile and bioavailability. The student learns the advantages and disadvantages of various types of modifications of the therapeutically active substance during the preparation of the final form of the drug. The student learns the physical basis of pharmaceutical production methods, i.e. spray drying, lyophilization or hot extrusion. Can conduct basic laboratory tests to characterize the medicinal material and perform simple analyzes and predictions based on them.
List of modules that must be completed before starting this module (if necessary)		not applicable

8.	Learning outcomes of the module			
Code	Description	Learning outcomes of the programme		Level of competenc (scale 1-5)
E1	The student understands how the physical state of a medicinal substance affects its effectiveness.	W03 W04		1 1
E2	Knows and understands the most common methods of manipulating the physical state in order to improve its solubility in water and bioavailability and is able to illustrate them with appropriate examples.	W05		1
E3	The student can describe the advantages and disadvantages of individual technological solutions, as well as select the appropriate method for a given medicinal substance.	W07		1
E4	The student is able to conduct an experiment, analyze the data obtained and prepare a report on the research.	U04 U05		1 1
E5	The student is acquainted with the physical and chemical characteristics of selected materials, as well as the basic principles of chemical management, occupational safety and health.	W10		1

9.	Methods of conducting classes		
Code	Category	Name (description)	
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture	

		a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided
e01	Practical methods	Laboratory exercise / experiment <i>[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment</i>

10. Forms of teaching					
Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
FZ1	lecture	15	exam	E1, E2, E3	a01
FZ2	laboratory classes	30	course work	E4, E5	e01

11. The student's work, apart from participation in classes, includes in particular:				
Code	Category	Name (description)		Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials <i>reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class</i>		Yes
a03	Preparation for classes	Developing practical skills <i>activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)</i>		Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion <i>a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course</i>		Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes <i>reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes</i>		Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks <i>reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade</i>		No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: <https://usosweb.us.edu.pl>.