

1.	Field of study	Biomedical Engineering
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2024/2025 (winter term), 2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies (in engineering)
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	General information about the module	
Module name		Testing methods for biomaterials 1
Module code		08-IBIB-S1-17-5-MBB1
Number of the ECTS credits		4
Language of instruction		Polish
Purpose and description of the content of education		Moduł "Metody badań materiałów 1" ma umożliwić studentowi/studentce poznanie zjawisk, zasad działania i budowy aparatury badawczej, które stosowane są w technikach i metodach pomiarowych służących do charakteryzowania struktury oraz właściwości biomateriałów. Dzięki temu student/studentka powinni opanować obsługę aparatury naukowo-badawczej oraz nabyć umiejętności interpretacji wyników pomiarowych. Zrozumienie zjawisk i zasad działania ma doprowadzić do umiejętnego zastosowania odpowiedniej techniki badawczej do oceny struktury i własności materiałów.
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)	
K_1	Rozumienie zjawisk wykorzystywanych w podstawowych metodach charakteryzowania struktury biomateriałów w tym metody podstawowe techniki mikroskopowe oraz promienie rentgenowskie; poznanie budowy i zasady działania specjalistycznej aparatury naukowo-badawczej	W01 W03	1 1	
K_2	Umiejętność obsługi specjalistycznej aparatury naukowo-badawczej, analizy struktury oraz właściwości biomateriałów; interpretacji wyników badań i oceny błędów pomiarowych	U09 U14 U19	1 1 1	
K_3	Kształtowanie kreatywnego myślenia	K05	1	

9.	Methods of conducting classes		
	Code	Category	Name (description)
	a01	Lecture methods / expository methods	Formal lecture/ course-related lecture <i>a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided</i>
	a05	Lecture methods / expository methods	Explanation/clarification

		<i>explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course</i>
c06	Demonstration methods	Demonstration-imitation <i>a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours</i>
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
k_fs_1	lecture	15	exam	K_1, K_2, K_3	a01
k_fs_2	laboratory classes	30	course work	K_1, K_2, K_3	a05, c06, e01

11. The student's work, apart from participation in classes, includes in particular:			
Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation <i>reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes</i>	No
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>	No
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>	No
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation <i>developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes</i>	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content <i>reading through the syllabus and getting acquainted with its content</i>	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class <i>exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class</i>	No
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</i>	Yes



		<i>of the task aimed at checking the level of the achieved learning outcomes</i>	
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>	Yes

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>.