

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

7.	General information about the module	
Module name		Selected Topics in Theoretical Physics
Module code		W4-FZ-BP-S2-1-25-02A
Number of the ECTS credits		8
Language of instruction		English
Purpose and description of the content of education		The aim of the lecture is to present selected problems in theoretical physics, in particular regarding classical mechanics, electrodynamics and quantum mechanics. The aim of the seminar is to acquire the ability to analyze dynamics of simple classical and quantum systems based on the content presented during the lecture.
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 will familiarize themselves with the elements of formalism in theoretical physics, which are fundamental tools in its description	KF_W03	4	
E2	master the conceptual foundations of computational methods necessary to study further, more specialized topics within particle theory, astrophysics, and solid state theory	KF_W05	4	
E3	students will be able to apply mathematical apparatus to solve physical problems in the microworld	KF_U02	5	
E4	the student can analyze and mathematically describe simple microscopic properties of matter, including in the area of relativistic velocities of objects	KF_U10	5	
E5	students will understand and be able to accurately formulate questions related to many of the achievements of civilization in recent decades	KF_K02	3	

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>
	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	45	exam	E1, E2, E5	a01
FZ2	discussion classes	45	course work	E3, E4	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>		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>		Yes
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>		No
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>		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>		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>.