

COURSE SYLLABUS

1.	Course: Trends in Modern Theoretical Physics B	
2.	Scientific discipline: physical sciences	
3.	Teaching language: English	
4.	University department: Faculty of Physics and Astronomy	
5.	Course/module type – mandatory (compulsory) or elective (optional): mandatory	
6.	University subject (programme/major): Physics, specialty Master's Study of Theoretical Physics	
7.	Study level (I or II): II	
8.	Year: 1	
9.	Semester (autumn/spring) autumn	
10.	Form of tuition and number of hours: lectures – 10, classes - 10	
11.	Initial requirements (knowledge, skills, social competences) regarding the course/module: algebra, differential calculus, mathematical methods of classical mechanics.	
12.	Learning objectives for the subject: Equipping the student with mathematical and conceptual tools of supersymmetric theories. Part of the introduction into selected areas of modern theoretical physics. Making students familiar with the research currently going on at the Institute of Theoretical Physics of the University of Wrocław, in order to help them choose the subject of their M.Sc. thesis.	
13.	Course content: Symmetries and supersymmetries in contemporary physical theories. Supermathematics, super-differential calculus. Supersymmetric classical mechanical models. Supercharges, covariant superderivatives. Supersymmetry transformations on-shell and off-shell.	
14.	Learning outcomes: Student knows and understands basics notions and techniques of supersymmetry. Student can learn and communicate his results in English using appropriate vocabulary. His/her approach to modern theoretical physics is based on critical thinking and scientific reasoning.	Learning outcomes for the course: F2_W01, F2_W02, F2_U01, F2_U05, F2_U11, F2_K03
15.	Obligatory literature: P. Freund "Introduction to Supersymmetry" CUP 1988 Recommended literature: B. deWitt "Supermanifolds" CUP 1992	

16.	Methods for verifying the assumed learning outcomes: - final inspection work - written semester work (individual)	
17.	Conditions and form of passing individual components of the subject: - constant monitoring of attendance and progress in the scope of classes - control work (final) - writing a report from classes	
18.	Student's workload	
	The form of carrying out classes by the student	Number of hours allocated to carry out a given type of classes
	classes (according to the study plan) with the instructor:	
	- lecture:	10
	- conversation classes:	10
	student's own work (including participation in groupwork):	
	- preparation for classes:	20
	- writing a report on classes:	15
	Total number of hours	55
	Number of ECTS	2