University of Gdańsk

Subject card

Subject name and code	Research Internship, PG_00208687						
Field of study	Physics						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2027/2028		
Education level	Master's studies		Subject group		Obligatory subject group in the field of study		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	4		ECTS credits		5.0		
Learning profile	academic		Assessment form		credit		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Michał Studziński				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	100.0	0.0	0.0	100
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	100		0.0		25.0	125
Subject objectives	The aim of the course is to prepare the student for independent scientific and project work through active participation in ongoing research conducted at the Faculty. The student becomes acquainted with advanced measurement equipment, experimental and numerical methods, as well as with the methodology of theoretical researchincluding model formulation, mathematical analysis, and computer simulations. During the internship the student takes part in the work of **three different research groups (3 × 40 hours + 3 × 20 hours)**, of which **at least one is theoretical and at least one is experimental**, according to individual preferences. Assignment to specific research groups is determined by the group leaders after a preliminary discussion with the student and is subject to their approval. The internship provides exposure to diverse research approaches and tools, while fostering teamwork skills, effective communication of results, and adherence to principles of scientific ethics.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[FIZMU2_K07] is ready to perform professional roles responsibly, requiring compliance with and development of professional ethics and working to ensure their compliance		
[FIZMU2_K01] is ready to critically evaluate the knowledge and content received, to formulate questions precisely and to further educate themselves and others	The student identifies gaps in their own knowledge while working in different research groups, formulates research questions related to the problems under analysis, and demonstrates readiness for further self-directed learning in new areas of physics.	[SK1] oral statement/conversation/ discussion [SK3] text preparation/written work [SK8] observation of student's independent or team work
[FIZMU2_K08] is ready to formulate competent opinions on advanced professional issues and to initiate actions for the public interest	The student formulates independent conclusions and opinions regarding the conducted research and argues for their significance in the context of contemporary scientific and societal issues related to physics.	[SK1] oral statement/conversation/ discussion [SK3] text preparation/written work
[FIZMU2_U11] can determine the directions of further improvement of knowledge and skills (including self-education) in the field of the selected specialty and outside of it	The student reflects on the experience gained while working in three research groups, identifies areas requiring further development, and plans future self-directed learning paths within the chosen specialization and related fields of physics.	[SU1] oral statement/conversation/ discussion [SU3] text preparation/written work
[FIZMU2_U09] can work independently or in a team, and lead a team	The student carries out assigned research tasks in each of the three groups, works both independently and collaboratively, and demonstrates initiative and responsibility for the assigned stages of the project.	[SU1] oral statement/conversation/ discussion [SU3] text preparation/written work [SU8] observation of student's independent or team work
[FIZMU2_U12] can use English in the field of physics, mathematics and computer science, in accordance with the requirements specified for the B2+ level of the Common European Framework of Reference for Languages, to the extent that allows for independent supplementation of education and communication with specialists in the field of the same or related specialization	The student is able to use English-language scientific literature, technical documentation, and specialist materials related to the topic of the master’s thesis. The student can independently analyse scientific texts in English, use specialist terminology in physics, mathematics, or computer science, and communicate the results of their work in written and oral form at a level appropriate for research activity.	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report [SU6] demonstration of practical skills
[FIZMU2_U08] can effectively communicate with both specialists and non-specialists in the area of study related to physics and to organize and lead discussions and debates on the subject	The student prepares and presents the results of the completed research internship in the form of a report, communicates research findings to members of the research groups, and is able to lead a discussion on their significance in the broader context of physics.	[SU1] oral statement/conversation/ discussion [SU3] text preparation/written work

Subject contents	The course content is **flexible**, and its **detailed scope depends on the choice of research groups as well as the individual interests and skills of the student**. The following areas illustrate possible activities during the internship: Introduction to Research Work: -Orientation in the topics and current projects of the three selected research groups (including at least one theoretical and one experimental group). -Familiarization with laboratory safety procedures, research ethics, and internal regulations. Work in a Theoretical Group (content varies with specialization): -Learning selected analytical and numerical methods. -Formulating and analyzing theoretical models, including preparation of individual calculations or computer simulations. Work in an Experimental Group (content depends on available equipment) -Preparation, calibration, and operation of advanced research apparatus. -Participation in planning and conducting measurements, collecting data, and performing preliminary data analysis. Integration and Presentation of Results -Preparing reports or summaries of work carried out in each research group. -Preparing and delivering a final presentation (e.g., a faculty seminar or popular-science talk) summarizing the internship outcomes (optional). Specific tasks, methods, and schedules are set **individually** in consultation with the heads of the three chosen research groups after preliminary discussions with the student. The program may include both experimental and theoretical activities in proportions that reflect the students abilities and research interests.
Prerequisites and co-requisites	**A. Formal requirements:** Completion of courses thematically related to the subject of the internship at the level of a bachelors degree and the first year of the masters program. **B. Prerequisites:** Knowledge of selected areas of physicsmechanics, thermodynamics, atomic and molecular physics, electricity and magnetism, optics, nuclear physics, condensed-matter physics, quantum physics, and mathematical physicsat the level of a bachelors degree and the first year of the masters program.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Final report (Research Group 3)	51.0%	33.0%
Final report (Research Group 1)	51.0%	34.0%
Final report (Research Group 2)	51.0%	33.0%

Recommended reading

Basic literature	Appropriate to the subject matter of the research conducted in the given research group and to the students interests. The reading list should be proposed by the students research supervisor in consultation with the head of the research group.
Supplementary literature	Relevant to the subject matter of the research carried out in the given research group and to the students interests. A supplementary reading list should be proposed by the students research supervisor in consultation with the head of the research group.
eResources addresses	

Example issues/ example questions/ tasks being completed	1. Research Group Theoretical Example topic: Simulations of the quantum dynamics of many-body systems. 2. Research Group Experimental Example topic: Optical characterization of semiconductor materials.
Work placement	Not applicable

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