COURSE DESCRIPTION CARD - SYLLABUS

Course name
Master course thesis

Course

Field of study
Technical Physics

Year/Semester
2/3

Area of study (specialization)
Nanotechnology and Functional Materials

Profile of study
practical

Level of study
Second-cycle studies

Course offered in
English

Form of study
full-time

Requirements
elective

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
	75	
Tutorials	Projects/seminars	

Number of credit points

20

Lecturers

Responsible for the course/lecturer:
Prof. dr. hab. Tomasz Martyński

e-mail: tomasz.martynski@put.poznan.pl

phone : +48 61 665 3172

Faculty of Materials Engineering and Technical Physics

Piotrowo street 3, 60-965 Poznan, Poland

Responsible for the course/lecturer:

Prerequisites

Knowledge of experimental physics and basic specialist knowledge of laser techniques, experimental methods of engineering and quantum metrology. The ability to solve physical problems based on the possessed knowledge, the ability to obtain information from the indicated sources. Understanding the need to expand your competences.

Course objective

1. Teaching students to use the acquired knowledge and skills to solve a technical and scientific problem, perform measurements and interpret the obtained results together with the assessment of their uncertainty.

2. Developing the ability to use literature sources and the method of quoting sources

3. Develop the ability to create professional test reports

Course-related learning outcomes

Knowledge

1. has ordered knowledge of basic physical phenomena in the field of electronics and quantum optics [K2_W02, K2_W06, K2_W07]

2. knows the state of knowledge concerning the issues included in the thesis [K2_W10] [K2_W11]

Skills

1. is able to design and make accessories for measuring systems, perform tests and measurements of the quantities characterizing the spectroscopic parameters of free atoms and ions [K2_U02, K2_U06, K2_U14, K2_U19]

2. is able, on the basis of the literature, to independently make a preliminary analysis of the results of laboratory measurements and draw conclusions [K2_U21]

3. is able to prepare a written work independently and efficiently present an oral presentation in Polish with a description of the measuring system and well-documented and interpreted measurement results [K2_U03, K2_U21]

Social competences

Completing the course means that:

1. can independently work on a given task, shows responsibility in this work [K1_K01].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

defence of the thesis and final examination/oral examination at the end of the semester

Programme content

1. Experimental systems for laser spectroscopy of atoms and ions

2. Methods of controlling the process of tunable lasers generation.

3. Knows in detail issues related to the issues of physicochemistry in technology

4. Current knowledge about functional materials and their research methods in the world.

5. Methodology and metrology of measurements of basic quantities of physical quantum systems

6. Methodology and metrology of measurements of complex physical quantities characterizing materials

7. Methods of preparing diploma theses.

Teaching methods

Laboratory exercises: practical exercises, conducting experiments, modeling, discussion, team work.

consultations on implemented projects, workshops - discussions on the presented transitional works.

Bibliography

Basic

literature selected individually in accordance with the subject of the work.

Additional

literature selected individually in accordance with the subject of the work.

Breakdown of average student's workload

	Hours	ECTS
Total workload	390	20
Classes requiring direct contact with the teacher	105	5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	185	10

[1] delete or add other activities as appropriate