# COURSE DESCRIPTION CARD - SYLLABUS

Course name
Engineering diploma seminar

## Course

Field of study
Technical Physics

Year/Semester
4/7

Area of study (specialization)

Profile of study
general academic

Level of study
First-cycle studies

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

## Number of hours

Lecture

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars
30

## Number of credit points

10

## Lecturers

Responsible for the course/lecturer:
prof. dr hab. Alina Dudkowiak

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Faculty of Materials Engineering and Technical Physics

Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:

## Prerequisites

Knowledge of the properties and technology of obtaining nanomaterials and functional materials; knowledge of experimental physics, including the use of advanced measurement techniques for the characterization of nanostructures and functional materials in the scope of the curriculum content implemented in semesters 1-6 at the 1st degree of education in the field of Technical Physics.

Ability to solve simple physical problems based on acquired knowledge, ability to obtain information from indicated sources.

Understanding the need to expand your competences, readiness to cooperate within a team.

## Course objective

1. Acquiring the ability to correctly write the diploma thesis, in particular the way of presenting the

results of the works of other researchers in it, i.e. clearly indicating the sources that were used to write the text of the diploma thesis.

2. Developing the ability to concisely but exhaustively present results of research, which are subject of engineering diploma thesis.

3. Developing the skills of independent or group presentation of the results of their work with the use of multimedia techniques.

## Course-related learning outcomes

### Knowledge

Having attended the classes, student will:

1. Be able to define physical concepts within the scope of the curriculum content appropriate for Technical Physics field of study; give examples of application of the laws of physics in the surrounding world; explain the purpose and meaning of simplified models in the description of physical phenomena. [K1_W08, K1_W09]

2. Know the current state of advancement and be aware of the latest development trends in the field of nanotechnology and technology of functional materials. [K1_W13, K1_W15]

3. Have basic knowledge of copyright protection. [K1_W19]

### Skills

As a result of the course, the student will acquire the following skills:

1. Ability to apply basic laws of physics and simplified models in the description and problem-solving in the scope of the curriculum content appropriate for Technical Physics field of study, and to obtain information from literature, databases and other sources. [K1_U02, K1_U03]

2. Ability to make a qualitative and quantitative analysis of results of physical experiments, plan standard measurements of physical phenomena, identify and evaluate the importance of basic factors disturbing the measurement, formulate conclusions based on the obtained results of calculations and performed measurements. [K1_U06, K1_U13, K1_U17, K1_U21, K1_U22, K1_U23]

3. Ability to prepare and present an oral presentation in Polish and a foreign language. [K1_U03, K1_U04]

### Social competences

As a result of the conducted classes, the student will acquire the following social competences:

1. Ability to actively engage in solving problems posed, independently develop and expand their competences, and to be responsible for the reliability of the results of their work and their interpretation. [K1_K03]

2. Awareness and understanding of the importance of non-technical aspects and effects of engineering activities; ability to act in accordance with the basic principles of ethics. [K1_K02, K1_K06]

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

| | | | |
|---|---|---|---|
| W08, W09, W13 | Assessment of the oral presentation with | 3 | 50.1% - 70.0% |
| W15, W19 | the use of computer software and | 4 | 70.1% - 90.0% |
| | assessment of answers on questions related to presentation | 5 | from 90.1% |
| U02, U03, U04, U06 | Assessment of the oral presentation with | 3 | 50.1% - 70.0% |
| U13, U17, U21, U22, U23 | the use of computer software and | 4 | 70.1% - 90.0% |
| | assessment of answers on questions related to presentation | 5 | from 90.1% |
| K02, K03, K06 | Assessment of student's activity in discussions during seminar | 3 | 50.1% - 70.0% |
| | classes and their involvement in preparation of the presentation | 4 | 70.1% - 90.0% |
| | | 5 | from 90.1% |

## Programme content

1. Rules for the preparation of theses and the diploma granting procedure.

2. Guidelines for the preparation and requirements for the presentation (in Power Point and similar) presented during the defense of the thesis.

3. Issues in the field of nanotechnology and functional materials, new advanced technologies and techniques related to the subject of theses.

4. Discussion of the obtained results, which are the subject of research in the engineering diploma thesis.

## Teaching methods

Seminar, consultations on implemented projects, workshops - discussions on the presented diploma projects.

## Bibliography

Basic

1. A. Oleś, Metody eksperymentalne fizyki ciała stałego, Warszawa, WNT 1998.

2. Spektroskopia Ciała Stałego, wyd. II popr. I uzup., pod red. M. Drozdowski, Wyd. Politechniki Poznańskiej 2001.

3. Z. Kęcki, Podstawy spektroskopii molekularnej, Warszawa, PWN 1992.

4. G.M. Barrow, Wstęp do spektroskopii molekularnej, Warszawa, PWN 1968.

5. B. Ziętek, Optoelektronika, Toruń, Wyd. UMK 2005.

Additional

Selected individually by the student in accordance with the topic of the work.

## Breakdown of average student's workload

| | Hours | ECTS |
|---|---|---|
| Total workload | 250 | 10,0 |
| Classes requiring direct contact with the teacher | 32 | 2,0 |
| Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1] | 218 | 8,0 |

[1] delete or add other activities as appropriate