



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Specialized Engineering Workshop [S1FT2>PSinż]

Course

Field of study

Technical Physics

Year/Semester

3/6

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

0

Laboratory classes

90

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

Number of credit points

6,00

Coordinators

dr hab. Mirosław Szybowicz prof. PP
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Lecturers

Prerequisites

Basic knowledge in the fields of physics, mechanics, chemistry, electrical engineering, materials science, nanotechnology, optoelectronics, development of research equipment, ability to acquire, use and process new knowledge.

Course objective

To acquire skills necessary for independent solving of engineering problems from the fields of physics, nanotechnology, computational physics, and construction of research equipment. To gain skills in solving problems in the field of technical physics, connecting physical and engineering areas, developing skills in designing and testing engineering solutions, selecting appropriate materials and equipment to solve research and engineering problems.

Course-related learning outcomes

Knowledge:

After completing the course, the student:

Has organized knowledge about physical phenomena of functional materials and phenomena in the field of classical experimental physics

Knows the current state of knowledge in the field of engineering work being performed and is aware of the latest trends in the field

Skills:

The student is able to independently solve problems that are the subject of the engineering work
The student is able to plan and conduct research in the area of engineering and technical physics

Social competences:

The student is aware of the need for continuous improvement and raising their professional competencies

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes are verified through observation and evaluation of the student's activity in laboratory and project work, assessment of skills and knowledge needed for the work, evaluation of the systematic approach of the student, and assessment of the content and form of prepared project solutions.

Programme content

Literature analysis related to the topic of the specialized workshop.
Development of work concept and selection of necessary engineering and equipment tools.
Familiarization with the used equipment.
Development and analysis of results obtained during the specialized workshop.

Course topics

none

Teaching methods

Solving engineering issues using appropriate engineering and programming tools and devices, and analyzing the results of one's work.

Bibliography

Basic:

1. C. Kittel, Wstęp do fizyki ciała stałego, Warszawa, PWN 1976
2. A. Oleś, Metody eksperymentalne fizyki ciała stałego, Warszawa, WNT 1998
3. L.A. Dobrzański, Materiały inżynierskie i projektowanie materiałowe: podstawy nauki o materiałach i metaloznawstwo, WNT, Warszawa 2006

Additional:

1. H.J. Guntherodt, R. Wiesendanger (Eds.), Scanning Tunneling Microscopy I, II and III, Berlin Springer-Verlag 1992
2. B. Ziętek, Optoelektronika, Wyd. UMK Toruń 2005

Breakdown of average student's workload

	Hours	ECTS
Total workload	150	6,00
Classes requiring direct contact with the teacher	90	3,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	60	2,50