



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Aspects of the physics of the XXI century

### Course

Field of study

Year/Semester

Transport

1/1

Area of study (specialization)

Profile of study

general academic

Level of study

Course offered in

Second-cycle studies

Polish

Form of study

Requirements

part-time

compulsory

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

9

Tutorials

Projects/seminars

### Number of credit points

1

### Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

Dr. Jędrzej Łukasiewicz

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ul. Piotrowo 3, 60-965 Poznań

### Prerequisites

Basics of mathematics, chemistry and physics,

Using literature (textbooks, internet), the ability to perceive lecture content,

Awareness of the need to deepen engineering knowledge and its place in everyday life

### Course objective

Providing students with basic knowledge of the physical aspects of the functioning of the world around us in the scope defined by the curriculum content appropriate for the field of study.

### Course-related learning outcomes

Knowledge



Student has ordered and theoretically founded general knowledge related to key issues in the field of transport engineering

#### Skills

Student is able to plan and conduct experiments, including measurements and simulations, interpret the obtained results and draw conclusions, as well as formulate and verify hypotheses related to complex engineering problems and simple research problems

Student is able to use analytical, simulation and experimental methods to formulate and solve engineering tasks and simple research problems

#### Social competences

Student understands the importance of using the latest knowledge in the field of transport engineering in solving research and practical problems

#### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written credit based on orally asked questions. In case of doubts related to the assessment, an oral exam is allowed.

#### Programme content

1. The development of research on the structure of matter
2. Properties of the nucleus
3. The process of disintegrating the atomic nucleus
4. Ways of obtaining energy in the process of breaking down the atomic nucleus (nuclear energy)
5. Project Manhattan
6. Other uses of alpha, betha, gamma radiation

#### Teaching methods

Multimedia presentation

#### Bibliography

Basic

1. Paul. A. Tipler - Fizyka współczesna
2. Jerzy Ginter - Wstęp do fizyki atomu, cząsteczek i ciała stałego
3. Nuclear Power, Understanding the Future, Bertrand Barre

Additional



### Breakdown of average student's workload

	Hours	ECTS
Total workload	30	1,0
Classes requiring direct contact with the teacher	9	0,5
Student's own work (literature studies, preparation for tutorials, preparation for tests) <sup>1</sup>	21	0,5

<sup>1</sup> delete or add other activities as appropriate