



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Methodology of Science for Engineers

### Course

Field of study

Computing

Area of study (specialization)

Level of study

First-cycle studies

Form of study

part-time

Year/Semester

2/3

Profile of study

general academic

Course offered in

Polish

Requirements

elective

### Number of hours

Lecture

12

Laboratory classes

Other (e.g. online)

Tutorials

12

Projects/seminars

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

dr. Radosław Kot

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Department: Inżynierii Zarządzania

address: J. Rychlewskiego 2, Poznań

Responsible for the course/lecturer:

### Prerequisites

The student has basic knowledge of history and culture; can choose the appropriate sources of knowledge and obtain the necessary information from them and provide a critical analysis and evaluation of solutions for complex and unusual engineering problems; is aware of the need of deepening and expanding knowledge to solve newly born technical problems.

### Course objective

Obtaining knowledge on scientific methodology, the results and limitations of practicing it.

### Course-related learning outcomes

Knowledge

Has basic knowledge necessary to understand social and ethical, economic, legal and other non-technical conditions of engineering activity; understands the impact of social and civilizational changes on the lifestyle of society (K1st\_W8)



### Skills

Is able to perceive the scientific aspects of a proper formulating and solving engineering problems, including environmental, economic and legal ones (K1st\_U1, K1st\_U1, K1st\_U19)

### Social competences

Is aware of the level of his knowledge in relation to the conducted research in science and technology (K1st\_K2)

Is ready to demonstrate reliability, impartiality, professionalism and ethical attitude; is aware of its social role as a graduate of a technical university, is ready to popularize scientific content to the society and to identify, when met, and resolve basic problems related to the field of study (K1st\_K5)

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Forming grade:

By discussions and questions checking the degree of mastery of previously presented issues (exercise).

Final grade:

Final essay on an accepted prreviously topic (lecture).

### Programme content

- Application of scientific methodology as a requirement for accepting any field of knowledge as a scientific one.
- Methodological basics: methodology of science and methodologies of specific fields.
- Basic concepts: hypothesis, theory, falsification.
- Scientific methodology as a cognitive tool and an engineer's work tool.
- Dynamics of changes in the methodology of science.
- Methodological discipline.
- Innovation and changes in methodology.
- Scientific thinking and colloquial thinking.
- Rules for sharing the results of the scientific work.
- Popularization of the results of scientific work.
- Practical problems of modern science: financing, industrial espionage, etc.
- Prospects for changes in science.



## Teaching methods

Lecture, discussion with students and providing materials of educational importance available on the Web.

## Bibliography

### Basic

1. Apanowicz J. „Metodologia ogólna”, strona: <https://wsaib.pl/images/files/E-Publikacje/MO.pdf>
2. Kotarbiński T. „Elementy teorii poznania”, logiki formalnej, metodologii nauk, Wrocław 1961
4. Such J., Szcześniak M., Filozofia nauki, Wyd. Naukowe UAM, Poznań 2006

### Additional

1. Kumar R., Research Methodology London 2011
2. Lem S., Summa Technologiae, Kraków 199

## Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	24	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests, project preparation) <sup>1</sup>	51	2,0

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