



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Methodology of Science for Engineers

Course

Field of study

Year/Semester

Computing

1/2

Area of study (specialization)

Profile of study

general academic

Level of study

Course offered in

First-cycle studies

Polish

Form of study

Requirements

full-time

elective

Number of hours

Lecture

Laboratory classes

Other (e.g. online)

24

Tutorials

Projects/seminars

12

Number of credit points

3

Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

dr. Radosław Kot

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Department: Inżynierii Zarządzania

address: J. Rychlewskiego 2, Poznań

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	36	1,5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests, project preparation) ¹	39	1,5

¹ delete or add other activities as appropriate