COURSE DESCRIPTION CARD - SYLLABUS

Course name
Enviromental Physics [S1FT1>FŚ]

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
20

Laboratory classes
0

Other (e.g. online)
0

Tutorials
10

Projects/seminars
0

Number of credit points

3,00

Coordinators

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Lecturers

Prerequisites

1. Basic knowledge concerning physics, mathematics and quantum physics. 2. Solving elementary physical problems based on acquired knowledge, ability to acquire information from given sources. 3. Understanding of necessity of own competence broadening, readiness to cooperate within group.

Course objective

1. Hand over basic knowledge concerning Environmental Physics : atmospheric physics, problems related to toxicity and general environmental pollution 2. Mold students abilities to solve physical problems, analyze results, prepare a computer presentation based on acquired knowledge. 3. Develop students abilities within literature study. 4. Mold students abilities to cooperate within group

Course-related learning outcomes

Knowledge:
1. orderly knowledge of physical phenomena in the field of classical experimental physics, quantum mechanics and differential equations [k1_w01; k1_w04]
2. mathematical knowledge necessary to description of physical laws and solving physical problems, covering: apply laplace transform to solutions of the diffusion equation [k1_w03]

Skills:
1. using mathematical and analytical knowledge to phenomenon description, and form and solve physical problems [k1_u01].
2. using (with understanding) recommended knowledge sources: literature, data baze and others. ability of interpretation, conclusions, form and justification of opinions [k1_u02].
3. preparing and presenting an computer presentation in polish [k1_u04]

Social competences:
1. ability to responsible work on appointed tasks, also in group [k1_k01].
2. responsibility for work effects, reliability and interpretation of obtained results. obey professional ethics [k1_k02].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
W01, W03, W04 Written exam
U01, Written exam
U02, U04 Computer and oral presentation Evaluation of answers
K01, K02 Evaluation of activity on exercises
100% - 90% (5.0)
80% - 89% (4.5)
70% - 79% (4.0)
60% - 69% (3.5)
50% - 59% (3.0)
0% - 49% (2.0)

Programme content

1. atmosphere physics 2. elements of weather and climate 3. transport of pollutants in the environment 4. acoustics and noise pollution 5. Additional content depending on the topics prepared by the students presentations

Teaching methods

Lecture: multimedial presentation, animations, solving example tasks
Exercises: practical exercises, discussion.

Bibliography

Basic
1. Egbert Boeker, Rienk van Grondelle: Fizyka Środowiska, PWN 2002
2. Marcin Popkiewicz, Aleksandra Kardaś, Szymon Malinowski: Nauka o klimacie, Post Factum 2018
3. R. Zarzycki, Wymiana ciepła i ruch masy w inżynierii środowiska, WNT 2010
4. Kazimierz Rup, Procesy przenoszenia zanieczyszczeń w środowisku naturalnym, WNT 2015

Additional
1. C. Smith, Environmental Physics, Routledge, London and New York, 2006
2. Murry L. Salby, Fundamentals of Atmospheric Physics, Elsevier, 1996
3. Judith A. Curry, Peter J. Webster, Thermodynamics of Atmospheres and Oceans, Elsevier, 1999
4. M.K. Yau, R R Rogers, A Short Course in Cloud Physics, Elsevier, 1989
5. David Archer, Globalne ocieplenie Zrozumieć prognozę, PWN 2010
6. Climate Change 2021: The Physical Science Basis www.ipcc.ch/report/ar6/wg1/

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	3,00
Classes requiring direct contact with the teacher	30	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00