History of physics - course description

General information

Course name	History of physics
Course ID	13.2-WF-FizP-HP-S17
Faculty	Faculty of Physics and Astronomy
Field of study	Physics
Education profile	academic
Level of studies	First-cycle studies leading to Bachelor's degree
Beginning semester	winter term 2018/2019

Course information

Semester	3
ECTS credits to win	3
Course type	obligatory
Teaching language	english
Author of syllabus	• prof. dr hab. Andrzej Drzewiński

Classes forms

The class form	Hours per semester (full-time)	Hours per week (full-time)	Hours per semester (part-time)	Hours per week (part-time)	Form of assignment
Lecture	30	2	-	-	Credit with grade

Aim of the course

The purpose of this course is to familiarize students with the development of concepts and methods of physics and related sciences on historical background. We show that such development does not take place "along a straight line" but on the contrary, is full of twists and turns and blind alleys. Thanks to accompanying multimedia presentations, verbal communication is illustrated with numerous examples.

Prerequisites

Knowledge of the issues discussed during classes in previous semesters.

Scope

- Origin of knowledge: everyday experiences, practice, magic, philosophy
- Branches and fields of science, institutionalization of science, science objectives
- Scientific methodologies over the centuries
- Prehistory of sciences
- Physical sciences in the ancient times
- Physical science in the Middle Ages
- The *Universe before Copernicus*
- *The foundations of modern science: experiment, quantitative laws*
- *From the Scientific Revolution to the Age of Enlightenment*
- *Epoque of clasical physics*
- *Crazy years of the early 20th century*
- *Becoming acquainted with the quantum mechanics*
- *Great teams, great equipment, great discoveries*
- *From the heliocentric system to gravitational waves*
- *What is next and how to go from here?*

Teaching methods

Teaching takes the form of lectures combined with discussion

Learning outcomes and methods of theirs verification

Outcome description	Outcome symbols	Methods of verification	The class form

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A student knows the stages of development of the life sciences with particular emphasis on physics, a student is aware of the coupling between the development and changes in the social, cultural and worldview, student understands the role of physics, in everyday life, but also is aware of the dangers posed by it		• a written assignment	• Lecture
A student is able to identify the difficulties faced by new and, in particular, revolutionary scientific ideas, a student is able to specify persons who made the greatest contribution to the development of physics and astronomy, including the Polish scientists		• a written assignment	• Lecture

Assignment conditions

Students are assessed on the basis of essay writing. The teacher provides the list of topics a month before the end of classes.

Recommended reading

[1] A. Drzewiński, J. Wojtkiewicz, *Opowieści z historii fizyki*, PWN 2001.

[2] J. Przystawa, *Odkryj smak fizyki*, Wydawnictwa Szkolne PWN 2012

[3] A. K. Wróblewski, *Historia fizyki Od czasów najdawniejszych do współczesności*, PWN 2007.

[4] *Dzieje nauki. Nauki ścisłe i przyrodnicze*, Wydawnictwa Szkolne PWN 2011

Further reading

[1] *M. Bragg, R. Gardiner, Na barkach gigantów. Wielcy badacze i ich odkrycia od Archimedesa do DNA, Prószyński i S-ka, Warszawa 2005.*

[2] Sean Carroll, Cząstka na końcu Wszechświata. Bozon Higgsa i nowa wizja rzeczywistości, Prószyński i S-ka, Warszawa 2014.

[3] E. Gates, Teleskop Einsteina. W poszukiwaniu ciemnej materii i ciemnej energii we Wszechświecie, Prószyński i S-ka 2010.

[4] *T. Kuhn, Struktura rewolucji naukowych, PWN 1968.*

Notes

Modified by dr hab. Piotr Lubiński, prof. UZ (last modification: 01-08-2018 14:47)