Study Program: Physics

Type and level of studies: Bachelor studies

Course name: History and Philosophy of Physics

Lecturer**: Mihajlo Odalović**

Status: Compulsory

ECTS: 3

Attendance prerequisites:

Course aims

Understanding the historical laws of the development of science, i.e. physics. Discerning philosophical determinations of scientists and their influence on the interpretation of scientific results.

Course outcome

The course should enable students to develop:

- General abilities: monitoring professional literature; analysis of the impact of different historical circumstances on the development of physics;
- Subject-specific abilities: using an example from the history of physics in teaching process; references to biographies of great scientists for educational purposes; spotting errors in students reasoning using examples from the history of physics.

Course content

Theoretical part

The importance of studying the historical development and philosophy of physics. The early period of science development. Physics between religion and philosophy. Development of mechanics in cooperation with astronomy and mathematics: Chronology of development from Aristotle to Newton: A period of chaos and order. Optics: the clash of the particle and wave concept. Electricity and magnetism: the period when these phenomena were explained by the existence of some invisible substance (ether) and the modern interpretation and explanation of these occurrences. Thermal phenomena: Phlogiston theory and its representatives. Thermodynamics and the kinetic molecular theory of matter and their representatives. Particles and fields: cycle development.

Quantum mechanics and relativity: the need for a new approach for understanding nature. The contribution of our scientists and scientists of our origin.

Literature

1. М. Млађеновић, Историјски развој физике Томови 1 – 5, Грађевинска књига, Београд
2. Р. Ђорђевић, Увод у философију физике, Јасен, Београд (2004);
3. Н. Сесардић, уредник: Филозофија науке, Нолит, Београд (1972);
4. К. Хемпел, Филозофија природних наука, Плато, Београд (1997).

Number of active classes				Other classes
Lectures: 2	Practical classes: 2	Other forms of teaching:		

Teaching methods

Lectures (2 classes per week during the semester), two term papers.

Assessment (maximum 100 points)

Course assignments	**points**	Final exam	**Points**
Lectures	10	oral exam	50
Term papers	40		
		.....	
Total	**50**		50