

Study programme: Undergraduate (Bachelor) academic studies - Physics Teaching

Course title: Contemporary teaching methods in physics teaching

Course status: elective

ECTS: 6

Requirement:

Learning objectives

Increasing knowledge and application of contemporary methods in physics teaching, in order to overcome the current problems in science teaching and introduction of research along with transfer of original ideas in teaching practice.

Learning outcomes

Upon completion of the course, students should have developed:

- *General skills:* use of scientific literature, scientific terminology, and application of contemporary methods in physics teaching.
- *Subject-specific skills:* ability to apply the scientific method and the inquiry based learning in treatment themes about natural phenomena and laws in elementary school and high school: motion, fluid properties, heat, optics, sound, electricity, electrical current, magnetism. Understand the role of contemporary methods in physics teaching for the development of creative thought and scientific ideas.

Course description

Theoretical classes

Introduction. The main objectives of the introduction contemporary methods in the actual school practice. Implementation and importance of different methods in teaching physics: the scientific method and inquiry based learning. Preparation for treatment of theme / unit based on the scientific method. Preparation for treatment of theme / unit based on the inquiry based learning. Planning and organizing activities for the introduction of scientific method and inquiry based learning into everyday physics teaching. Development of concepts of physics based on the application of scientific method and inquiry based learning from the first grade of primary education. Scientific method and the popularization of physics. The importance of simple experiment for the scientific method and inquiry based learning. Create one's own archive - database on the application of scientific method in the treatment of physical phenomena and laws in the elementary and secondary education: motion, fluid properties, heat, optics, sound, electricity, electricity, magnetism.

Practical classes

Practices and Seminars: the analysis of existing material on the successful introduction of scientific method and inquiry based learning in the actual school practice, and preparation of one's own material for treatment of given topics and themes of their choice, using the scientific method and inquiry based learning. Simple experiments are suitable for treatment themes by the use of the scientific method and inquiry based learning in the treatment of physical phenomena and laws in the elementary and secondary education: motion, fluid properties, heat, optics, sound, electricity, electricity, magnetism.

Literature

1. Владимир Пољак, Дидактике, Школска књига, Загреб (1980).
2. Боројевић, С. ((1974) *Методологија експерименталног научног рада*, Раднички универзитет „Радивој Ћирпанов”, Нови Сад
3. Душанка Ж. Обадовић, Маја Стојановић, Милица Павков Хрвојевић: Једноставни огледи у физици 6., 7., 8. разред основне школе, Завод за уџбенике, Београд (2007).
4. J. Mintzes and W. H. Leonard, Handbook of college science teaching, national Teachers Sciences associations (2006).
5. Ф. Константиновић, “Учим на огледима 2 и 3”, Техничка књига, Загреб (1972).

Links:

Physikalische freihandexperimente, Multimedia Physic Verlag, (1999) , www.multimedia-physik.com
<http://www.chias.org/www/edu/activities/activity1/activity1.html>

Weekly teaching load				Other:
Lectures:	Exercises:	Other forms of teaching:	Student research:	
3	1	2		