



OPIS PREDMETA / SUBJECT SPECIFICATION

Predmet:	Korelacijski projekti
Subject Title:	Correlative projects

Študijski program Study programme	Študijska smer Study field	Letnik Year	Semester Semester
FIZIKA PHYSICS		2	1

Univerzitetna koda predmeta / University subject code:

Predavanja Lectures	Seminar	Sem. vaje Tutorial	Lab. vaje Labor work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30	20				250	10

Nosilec predmeta / Lecturer:

Jeziki: **Predavanja / Lecture:**
Languages: **Vaje / Tutorial:**

Pogoji za vključitev v delo:

Ni posebnih zahtev.

Prerequisites:

None.

Vsebina:

Predavanja:
Sodobni pogled na fiziko in naravoslovne znanosti ter sodobni trendi v počevanju fizike.

Sodobne interdisciplinarne vede, njihovo področje delovanja in vloga fizike v njih.

Zakaj, kako, kdaj in kje vpletati:
- nekonvencionalne vsebine
- interdisciplinarne vsebine
- vsebine s področja aktualnih raziskav v fiziki
- vsebine s področja tehnike, medicine in zdravstva, naravoslovja, astronomije, aplikativne fizike
v formalno in neformalno poučevanje fizike na vseh nivojih izobraževanja.

Izzivi in nevarnosti.

Metodologija vključevanja sodobnih fizikalnih vsebin v poučevanje fizike.

Analiziranje in vrednotenje uporabe korelacijskih projektov za pouk fizike.

Seminar:
Konkretni primeri izvedbe korelacijskih projektov in njih predstavitev.

Contents:

Lectures:
Modern view on the Physics and Natural sciences and new trends in Physics education.

Modern interdisciplinary sciences, their field of interest and the role of physics in them.

Why, how, when and where to apply:
- unconventional topics
- interdisciplinary topics
- topics from the fields of up-to-date research in physics
- topics from the fields of technology, medicine and health sciences, science, astronomy, applicative physics
in formal and informal curriculum of Physics at all levels of education.

Challenges and threats.

Methodology of application of modern topics in Physics education.

Analysis and evaluation of the correlative projects in Physics education

Seminar:
Case study of correlative projects and their presentation.

Temeljni študijski viri/Textbooks:

1. E. Boeker, R. van Grondelle, Environmental physics, 2. ed., John Wiley & Sons, Inc., New York, 2000

2. P. R. Bergethon: The Physical Basis of Biochemistry. The Foundations of Molecular Biophysics, Springer, New York 1998
 3. G. B: Benedek, F. M. H. Villars: Physics with Illustrative Examples from Medicine and Biology: Mechanics, Statistical Physics, Electricity and Magnetism, Springer, New York 2000
 4. D. C. Giancoli, Physics 4th ed., Prentice Hall, New Jersey, 1995
 5. P. P. Urone: Physics with health science applications. John Wiley, New York 1986
 6. P. Davidovits: Physics in Biology and Medicine (2. izdaja). Academic Press, San Diego 2001
 Revije: Physics Teacher, Physics Education, Technology&Learning, Computers&Education, Educational Technology in slovenske fizikalne, računalniške ter didaktične revije.

Cilji

Student/ka:

- pridobi dodatno znanje in poglobi obstoječe znanje o korelacijskih projektih izobraževalne fizike za izboljšanje kakovosti učenja in poučevanja fizike v osnovnih in srednjih šolah ter na univerzi.
- se usposobi za samostojno razvojno-raziskovalno delo na področju inovativnih projektov.

Objectives:

A student:

- Gains additional knowledge and deepens the existing one about correlative projects in physics education for improvement of physics teaching and physics education quality in primary and secondary schools and universities.
- Is qualified for advanced independent development and research work on the field of correlative projects.

Predvideni študijski rezultati:

Znanja in razumevanja:

- Poglobljeno poznavanje in razumevanje didaktike fizike.
- Poglobljeno znanje in razumevanje raziskovanja fizikalno-didaktičnih procesov
- Poglobljeno poznavanje modernih fizikalnih in interdisciplinarnih vsebin ter pordročij aktualnega raziskovanja

Prenosljive/ključne spretnosti in drugi atributi:

- Sposobnost kritične uporabe znanstvenih in strokovnih spoznanj s področja didaktike fizike.
- Sposobnost samostojnega raziskovanja v didaktiki fizike.
- Samostojnost v razvijanju novih znanj, rešitev in idej za vpletanje interdisciplinarnih in sodobnih vsebin v poučevanje fizike.

Intended learning outcomes:

Knowledge and Understanding:

- Deeper knowledge and understanding of the didactics of physics.
- Deeper knowledge and understanding of research processes in didactics of physics.
- Deeper knowledge of modern topics from Physics and interdisciplinary sciences and up-to-date research

Transferable/Key Skills and other attributes:

- The ability of critical use and application of scientific and professional findings from the field of didactics of physics.
- The ability of independent research in didactics of physics.
- Self-independence in developing novel knowledge, solutions and ideas for application of interdisciplinary and modern topics in Physics Education.

Metode poučevanja in učenja:

predavanja
 obravnava študijskih primerov z diskusijo,
 projektno delo
 multimedijška predstavitev

Learning and teaching methods:

interactive lectures
 case studies discussion,
 project work,
 multimedia presentation

Načini ocenjevanja:

- Projektna naloga
- Ustni izpit

Delež (v %) /
 Weight (in %)

50
 50

Assessment:

- Project
- Oral examination