

| UČNI NAČRT PREDMETA / COURSE SYLLABUS | | | | | | |
|--|---------------------------|--------------------------------------|------------------------------|------------------------------------|--------------------------------------|-------------|
| Predmet: | | Projektno delo v fiziki | | | | |
| Course title: | | Physics project laboratory | | | | |
| Študijski program in stopnja Study programme and level | | Študijska smer Study field | | Letnik Academic year | Semester Semester | |
| Enoviti magistrski študijski program Pedagoška matematika | | ni smeri | | 3 ali 4 | prvi ali drugi | |
| Integrated Master's study programme Pedagogical Mathematics | | none | | 3 or 4 | first or second | |
| Vrsta predmeta / Course type | | | | izbirni | | |
| Univerzitetna koda predmeta / University course code: | | | | M0578 | | |
| Predavanja Lectures | Seminar Seminar | Vaje Tutorial | Klinične vaje work | Druge oblike študija | Samost. delo Individ. work | ECTS |
| | | 30 | | | 60 | 3 |
| Nosilec predmeta / Lecturer: | | prof. Gorazd Planinšič | | | | |
| Jeziki / Languages: | | Predavanja / Lectures: | | slovenski/Slovene | | |
| | | Vaje / Tutorial: | | slovenski/Slovene | | |
| Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti: | | | | Prerequisites: | | |
| | | | | | | |
| Vsebina: | | | | Content (Syllabus outline): | | |
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| <p>Na kratko: skupinsko reševanje praktične naloge odprtega tipa in izdelava poročila v obliki spletne strani.</p> <p>Več: delo poteka v skupinah, ki štejejo od pet do sedem članov. Vsaka skupina dobi, dobro definirano praktično nalogo (projekt), pot do rešitve pa morajo najti sami. Skupine dobijo teme projektnih naloge vsaj dva tedna pred začetkom praktičnega dela.</p> <p>Delo obsega praktični del in izdelavo spletnega poročila. Pri izvedbi praktičnega dela so skupinam, v omejenem obsegu, na voljo tudi usluge specializiranih delavnic na FMF (mehanska, mizarska, elektronska delavnica).</p> | <p>Solving a practical open ended problem and preparing a web-page report. All the work is performed in groups of 5 to 7 students.</p> <p>Every group is assigned a project task but with no hints how to solve it. Groups receive project tasks two weeks before starting the organized practical work. Project work includes practical part (in the workshop) and preparing the web-report (in students's free time). Students can request limited help from mechanical and electronic workshops.</p> |
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Temeljni literatura in viri / Readings:

Iskanje primernih virov je del projektnega dela. Priporočen vir so naslednje štiri revije, ki so dosegljive v Fizikalni knjižnici FMF in na navedenih spletnih straneh omogočajo tudi elektronsko iskanje/Searching for the relevant literature is part of the course assignment. Some suggested sources that are available also in the Physics dept. library:

Physics Education (<http://www.iop.org/EJ/S/0/30619/journal/0031-9120>)

European Journal of Physics (<http://www.iop.org/EJ/search/0143-0807/1>)

American Journal of Physics (<http://scitation.aip.org/ajp/>)

The Physics Teacher (<http://scitation.aip.org/tpt/>)

Cilji in kompetence:

timsko reševanje praktične naloge odprtega tipa, ki bazira na znanju naravoslovnih predmetov gimnazijskega programa
 uporaba usvojenega znanje fizike v novih, netipičnih situacijah

uporaba osnovnih merilnih naprav in računalnika za zajemanje, analizo in prikaz izmerkov

racionalno upravljanje s časom in materialnimi sredstvi

Objectives and competences:

solving practical open ended problems in small group (team), expected knowledge is at the level of the high school science subjects
 apply acquired knowledge in new situation

ability to use basic measuring devices and computer for data acquisition and analysis

ability to use time and resources economically

ability to prepare and present the report of project work in the form of webpage

izdelava poročila in predstavitve rezultatov v obliki spletne strani

Predvideni študijski rezultati:

Znanje: poznavanje opreme in postopkov za merjenje osnovnih fizikalnih količin, poznavanje osnovnih načel predstavljanja rezultatov v naravoslovju
Razumevanje: poglobljanje razumevanja osnovnih fizikalnih konceptov ob reševanju konkretnega praktičnega problema

Intended learning outcomes:

Knowledge: students will learn how to handle basic measuring devices in order to perform measurements, they will also learn how to present scientific data
Understanding, Deepening of understanding the basic physics concepts through solving concrete problems

Metode poučevanja in učenja:

projektno delo, učenje z odkrivanjem, raziskovalno delo

Learning and teaching methods:

Project work, learning by inquiry, research work in science

Delež (v %) /
Weight (in %)

Načini ocenjevanja:

Assessment:

Pogoji za uspešno opravljen predmet:
- polna prisotnost pri praktičnem delu in pri izdelavi poročila,

- pravočasna oddaja poročila,

- navedba študenta/ke v poročilu skupine.

Ocene: opravil – ni opravil

100 %

Requirements for completing the course:
- full participation during the practical work and during the preparation of the report

- on-time submission of the report

- co-authoring the web report.

Grades: passed – not passed

Reference nosilca / Lecturer's references:

Gorazd Planinšič:

– PLANINŠIČ, Gorazd. Color mixer for every student. *The Physics teacher*, ISSN 0031-921X, 2004, 42, str. 138-142 [COBISS.SI-ID 1728868]

– PONIKVAR, Dušan, PLANINŠIČ, Gorazd. Conservation of mechanical and electric energy : simple experimental verification. *European journal of physics*, ISSN 0143-0807, 2009, vol. 30, no. 1, str. 47-56 [COBISS.SI-ID 2153316]

– PLANINŠIČ, Gorazd. IYPT problems as an efficient source of ideas for first-year project laboratory tasks. *European journal of physics*, ISSN 0143-0807, 2010, vol. 30, no. 6, str. S133-S140 [COBISS.SI-ID 2275428]