



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet: Projekti s področja izobraževalne fizike
Course title: Projects in the educational physics

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
FIZIKA		1.	1.
PHYSICS		1.	1.

Vrsta predmeta / Course type

Obvezni za modul Izobraževalna fizika
1

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Lab. vaje Laboratory work	Terenske vaje Field work	Samost. delo Individ. work	ECTS
5	5				290	10

Nosilec predmeta / Lecturer: Robert Repnik

Jeziki / Languages:
Predavanja / Lectures: slovenski/Slovenian
Vaje / Tutorial:

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti: **Prerequisites:**

Osnovna znanja iz naravoslovnih in/ali tehničnih znanosti

Basic knowledge from natural and/or technical sciences

Vsebina:

Content (Syllabus outline):

Načrtovanje projektov.

Ponudba in iskanje projektov v Sloveniji in EU.

Dosedanji, tekoči in predvideni projekti s področja izobraževalne fizike.

Posebnosti organiziranja in vodenja projektov s področja izobraževalne fizike.

Sodelovalno delo raziskovalcev in pedagoškega osebja na osnovnih in srednjih šolah.

Raziskovalno delo v okviru projektov s področja izobraževalne fizike.

Specifične težave strokovnih in znanstvenih projektov s področja izobraževalne fizike ter predlogi rešitev zanje.

Planning projects.

Offer and searching for projects in Slovenia and the EU.

Past, current and planned projects in the field of physics education.

Special features of the organization and management of projects in the field of physics education.

Collaborative work of researchers and teaching staff in primary and secondary schools.

Research work in the frame of projects in the field of physics education.

Specific problems of professional and scientific projects in the field of physics education and proposals for solutions.

Temeljni literatura in viri / Readings:

1) Guide to the Project Management Body of Knowledge, Project Management Body of Knowledge: Project Management Institute, Newtown Square, Pennsylvania, ZDA, 2004.

2) James P. Lewis, Fundamentals of Project Management, American Management Association, New York, ZDA, 2002.

3) Članki v revijah New Scientist, Physics World in Science

4) Na spletnih straneh Oddelka za fiziko objavljena elektronska gradiva / teaching material published on websites of Department of Physics

5) Literatura in spletni viri projekta Razvoj naravoslovnih kompetenc

6) Spletni viri o projektih s področja izobraževanja fizike v Sloveniji in EU.

Cilji in kompetence:

Študentje usvojijo znanja, potrebna za razumevanje vodenja projektov, za samostojno izvajanje preprostih projektov in za obvladovanje kompleksnih projektov, z osredotočenostjo na projekte v izobraževanju fizike.

Objectives and competences:

Students achieve knowledge that is necessary for complex understanding of project management, for independent implementation of elementary projects and for mastering the complex projects, with focus on projects in the field of physics education.

Predvideni študijski rezultati:

Znanje in razumevanje:

Razumevanje vodenja projektov v izobraževanju fizike in obvladovanje nekaterih orodij za učinkovito vodenje projektov.

Intended learning outcomes:

Knowledge and understanding:

Understanding of project management in physics education and mastering some tools for effective project management.

Prenesljive/ključne spretnosti in drugi atributi:

Predmet pripravlja študenta za samostojno delo na projektih s področja izobraževanja fizike.

Transferable/Key Skills and other attributes:

Subject prepares the student for independent work in the field of projects in physics education.

Metode poučevanja in učenja:

Metodika obsega: teoretičen uvod v obravnavano snov in seminarje študentov, v katerih obdelajo praktične primere vodenja projektov s področja izobraževanja fizike.

Learning and teaching methods:

They are based on: theoretical introduction to specific topics and student seminars where practical cases of project management in the field of physics education are covered.

Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)	Delež (v %) / Weight (in %)	Type (examination, oral, coursework, project):
projektna naloga	50	project
ustni izpit	50	oral examination

Reference nosilca / Lecturer's references:

1. ZIDANŠEK, Aleksander, KRALJ, Samo, REPNIK, Robert, LAHAJNAR, Gojmir, RAPPOLT, Michael, AMENITSCH, Heinz, BERNSTORFF, Sigrid. Smectic ordering of octylcyanobiphenyl confined to control porous glasses. *Journal of physics, Condensed matter*, ISSN 0953-8984, 2000, vol. 12, no. 8A, str. A431-A436, ilustr. [COBISS.SI-ID 9631752], [JCR, SNIP, WoS do 15. 2. 2013: št. citatov (TC): 1, čistih citatov (CI): 0, normirano št. čistih citatov (NC): 0, Scopus do 6. 3. 2011: št. citatov (TC): 0, čistih citatov (CI): 0, normirano št. čistih citatov (NC): 0]
2. REPNIK, Robert, MATHELITSCH, Leopold, SVETEC, Milan, KRALJ, Samo. Physics of defects in nematic liquid crystals. *European journal of physics*, ISSN 0143-0807, 2003, 24, str. 481-491, ilustr. [COBISS.SI-ID 12755208], [JCR, SNIP, WoS do 10. 5. 2014: št. citatov (TC): 20, čistih citatov (CI): 16, normirano št. čistih citatov (NC): 27, Scopus do 5. 11. 2014: št. citatov (TC): 21, čistih citatov (CI): 14, normirano št. čistih citatov (NC): 24]
3. PLOJ VIRTIČ, Mateja, REPNIK, Robert. Improving quality of the educational process by raising teachers' communication skills. V: LAMANAUSKAS, Vincentas (ur.). *Philosophy of mind and cognitive modelling in education - 2012*, (Problems of education in the 21st century, ISSN 1822-7864, vol. 46). Siauliai: Scientific Methodological Center Scientia Educologica, 2012, str. 109-115. [COBISS.SI-ID 19493128]
4. GERLIČ, Ivan, REPNIK, Robert. Conceptual learning of physics in Slovenian primary schools. V: LAMANAUSKAS, Vincentas (ur.). *Challenges of science, mathematics and technology teacher education in Slovenia*, (Problems of education in the 21st century, ISSN 1822-7864, vol. 14).

Siauliai: Scientific Methodological Center Scientia Educologica, 2009, str. 65-69. [COBISS.SI-ID [17352968](#)]

5. REPNIK, Robert, GRUBELNIK, Vladimir. ICT and competences connected with the subject Environmental education in primary school. *Literacy information and computer education journal*, ISSN 2040-2589, mar. 2011, vol. 2, iss. 1, str. 270-276. <http://infonomics-society.org/LICEJ/ICT%20and%20Competences%20Connected%20with%20the%20Subject%20Environmental%20Education%20in%20Primary%20School.pdf>. [COBISS.SI-ID [19407624](#)]