Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Računalniško podprto laboratorijsko delo
Course title:	**Computer supported laboratory work**

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Enovit magistrski študijski program druge stopnje Predmetni učitelj	**/**	**5**	**Poletni Summer**
Five-year master's degree program Subject Teacher	**/**		

Vrsta predmeta / Course type Izbirni / Elective

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	**10**		**30**		**45**	**3**

Nosilec predmeta / Lecturer: Andrej Šorgo

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

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

Jih ni.

Prerequisits:

No prerequisites.

Vsebina:

Predavanja:

Predmet je namenjen mojstrenju rabe informacijske in komunikacijske tehnologije (IKT) v razredu, predvsem:

- Praktične rabe IKT v izobraževanju;
- Virtualni računalniško podprt laboratorij
- Realni računalniško podprt laboratorij;

Laboratorijske vaje

- Praktično delo: izvedba računalniško podprtih eksperimentov, mikropouk

Content (Syllabus outline):

Lectures:

The intention of the subject is to master use of the information and communication technologies (ICT) in education through practical work, especially:

- Practical use of ICT in education;
- Virtual computer supported laboratory;
- Real computer supported laboratory;

Laboratory exercises

- Practical work: set up of computer supported experiments;microteaching

Temeljni literatura in viri / Readings:

- Izbrana poglavja iz: Handbook of Research on Science Education. Ed.Sandra K Abell, Norman G Lederman. 2007. Routledge.
- Šorgo, A. Računalniško podprt laboratorij pri poukubiologije v programu gimnazije. Zavod RS za šolstvo, 2005.
- Izbrani prispevki iz zbornikov konferenc VIVID, SIRIKT, MIPRO,
- Spletni viri.

Cilji in kompetence:

Po izvedenem kursu naj bi študent-ka posedoval-a:

- teoretična in praktična znanja s področja didaktike in metodike vključevanja IKT v pouk biologije;
- spretnosti za pripravo, izvedbo in ovrednotenje dela učencev ter lastnega dela pri pouku biologije ob uporabi IKT.

Objectives and competences:

- After completing the course a prospective teacher should possess:
- Theoretical and practical knowledge on the field of didactic and methodics on ICT in biology education.
- Skills needed for preparation, performance and assessment of student's and his/her own work in biology teaching using ICT.

Predvideni študijski rezultati:

Znanje in razumevanje:

- poznavanje in razumevanje pedagoško' didaktično-vsebinsko-tehnoloških znanj potrebnih za izvajanje pouka ob uporabi IKT;
- uporaba IKT v različnih kontekstih izobraževanja:
- sposobnost reševanje bioloških in drugih problemov povezanih s poučevanjem biologije z uporabo informacijsko-komunikacijske tehnologije;
- obvladovanje informacijskih tehnologij potrebnih za poučevanje biologije;

Prenesljive/ključne spretnosti in drugi atributi:

- Sposobnost povezovanja bioloških znanj z znanji drugih strok in ved ob uporabi IKT .
- Upravljanje z IKT

Intended learning outcomes:

Knowledge and Understanding:

- Knowledge about and understanding of technological pedagogical content knowledge needed for successful implementation of ICT in biology education;
- Use of ICT in different contexts;
- Competence in solving biological and other problems connected with biology education with the use of ICT.
- Skills in manipulation with the information technology used in biology teaching;

Transferable/Key Skills and other attributes:

- Abillity to connect biological science with the knowledge from other fields by using ICT.
- Work with ICT.

Metode poučevanja in učenja:

- Predavanja
- Laboratorijske vaje
- Individualno delo

Learning and teaching methods:

- Lectures
- Laboratory excersises
- Individual work

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
• Ocena kolokvija iz vaj	25	• **Grade from laboratory work**
• Ocena individualnih izdelkov zbranih v porfoliju;	25	• Grade on individual portfolio
• Ustni izpit	50	• **Ustni izpit**

Reference nosilca / Lecturer's references:

ŠORGO, Andrej, ŠPERNJAK, Andreja. Practical work in biology, chemistry and physics at lower secondary and general upper secondary schools in Slovenia. *Eurasia*, 2012, vol. 8, no. 1, str. 11-19. http://www.ejmste.com/v8n1/EURASIA_v8n1_Sorgo.pdf. [COBISS.SI-ID 18982408],

ŠORGO, Andrej, KOCIJANČIČ, Slavko. False reality or hidden messages: reading graphs obtained in computerized biological experiments. *Eurasia*, 2012, vol. 8, no. 2, str. 129-137. http://www.ejmste.com/v8n2/EURASIA_v8n2_Sorgo.pdf.

ŠORGO, Andrej, USAK, Muhammet, AYDOGDU, M., KELES, Ozgul, AMBROŽIČ-DOLINŠEK, Jana. Biology teaching in upper secondary schools: comparative study between Slovenia and Turkey. *Energy education science and technology. Part B, Social and educational studies*, 2011, vol. 3, iss. 3, str. 305-314. [COBISS.SI-ID 17941000]

ŠORGO, Andrej, AMBROŽIČ-DOLINŠEK, Jana, TOMAŽIČ, Iztok, JANŽEKOVIČ, Franc. Emotions expressed toward genetically modified organisms among secondary school students and pre-service teachers. *J. Balt. sci. educ.*, 2011, vol. 10, no. 1, str. 53-64. [COBISS.SI-ID 18312456]

ŠORGO, Andrej, HAJDINJAK, Zdravka, BRIŠKI, Darko. The journey of a sandwich: computer-based laboratory experiments about the human digestive system in high school biology teaching. *Adv Physiol Educ*, 2008, vol. 32, no. 1, str. 92-99, ilustr. http://dx.doi.org/10.1152/advan.00035.2007. [COBISS.SI-ID 15919368]