Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

UČNI NAČRT PREDMETA / SUBJECT SPECIFICATION	
Predmet:	Sodobne metode poučevanja tehnike
Subject Title:	Advance methods for technical/technological education

Študijski program Study programme	Študijska smer Study field	Letnik Year	Semester Semester
Tehnika – področje izobraževanja, 3. stopnja		1	letni
		ali	
		2	zimski
Education in Engineering, 3rd cycle		1	Summer
		or	
		2	winter

Univerzitetna koda predmeta / University subject code:

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Labor work	Teren. vaje Field work	Samost. Delo Individ. Work	ECTS
10	5				75	**3**

Nosilec predmeta / Lecturer: Kosta Dolenc

Jeziki / Languages:
Predavanja / Lecture: Slovenščina / Slovene
Vaje / Tutorial:

Pogoji za opravljanje študijskih obveznosti:

Osnovno znanje iz didaktike, pedagogike in psihologije.

Prerequisites:

Basic knowledge from didactics, pedagogy and psychology.

Vsebina:

Predavanja:
- Osnovna izhodišča sodobnih poučevalnih metod na področju tehniško-tehnoloških študijev;
- Visokošolska didaktika in tehnično/tehnološki študiji;
- Sodobne metode tehniških študijev v evropskih kurikulih;
- Sodobni inženirski praktikum - idejna zasnova, makro in mikro priprava,
- Organizacija praktičnega izobraževanja v delovnih procesih;
- Načrtovanje in izvajanje učnega procesa;
- Uporaba sodobnih metod in tehnologij pri izvajanju učnega procesa;
- Sodobni načini priprave učnih gradiv;

Seminar:
Seminar aplikativno dopolnjuje vsebino predavanj z reševanjem praktičnih problemov iz izobraževalnega procesa v inženirski praksi .

Content (Syllabus outline):

Lectures:
- base origin of contemporary methods at technical-technological studies;
- High School didactics in face of technical/technological studies;
- contemporary methods of trechnical studies in the European Curriculum;
- contemporary Engineer practicum - planning of ideas, macro and micro plan;
- organize practical education and training in working process;
- planning and executing educational and training process;
- use of advance methods and technologies for executing educational and training process;
- Contemporary methods for preparing learning materials.

Seminar:
The seminar applicatively completes the contents of lectures through the solution of practical problems from educational process in Engineers practice.

Temeljni literatura in viri / Textbooks:

DOLENC, Kosta. Primer kognitivnega učenja s tehnologijo. V: ABERŠEK, Boris (ur.), FLOGIE, Andrej (ur.), ŠVERC, Alenka (ur.). Sodobno kognitivno izobraževanje in transdisciplinarni modeli učenja : pedagoška strategija. Maribor: Fakulteta za naravoslovje in matematiko, 2015, str. 53-66

Aberšek, B. *Didaktika tehniškega izobraževanja med teorijo in prakso*. 1. izd. Ljubljana: Zavod Republike Slovenije za šolstvo, 2012

DOLENC, Kosta. 3D modeliranje in vizualizacija s programom SketchUp. [Limbuš]: Izotech, 2012

DOLENC, Kosta, ABERŠEK, Boris. TECH8 intelligent and adaptive e-learning system : integration into Technology and Science classrooms in lower secondary schools. Computers & Education, ISSN 0360-1315. [Print ed.], Mar. 2015, vol. 82, str. 354-365

Cilji:	**Objectives:**
podati poglobljeno teoretično znanje s področja prepoznavanja osnovnih značilnosti delovne, tehničnega in proizvodno – tehničnega usposabljanja za delo, ugotoviti mesto inženirske pedagogike v visokošolski didaktiki; podati sodobne opredelitve konceptov in modelov v inženirski pedagogiki; prikazati praktično uporabo strategij vzgojno – izobraževalnih strategij pri usposabljanju za delo; razviti sposobnost za uspešno načrtovanje različnih oblik izobraževanja; razviti sposobnosti ljudi za samostojno in kompetentno reševanje praktičnih primerov načrtovanja in vrednotenja učinkov izobraževalnega dela.	to represent profound theoretical knowledge in the field of recognizing the basic characteristics of working, technical and production – technical education and training for work; found and located the place of Engineers pedagogy in high school didactics; to represent modern concept and model definitions of teaching and training in Engineers pedagogy; to show practical usage of training – educational strategies to qualify someone for work ; develop capability for successful planning and executing different form of education and training; to develop the peoples abilities for an independent and competent for solving of practical examples with regard to planning and evaluating the effects of educational work.
Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: poznavanje splošnih kriterijev za načrtovanje delovnih, tehničnih in proizvodno – tehničnih usposabljanj; poznavanje osnovnih opredelitev, ki se nanašajo na koncepte in modele v inženirski pedagogiki; razumevanje pomena uporabe in priprave strokovne literature ter sodobnih pripomočkov za učinkovit in kakovosten izobraževalni proces.	Knowledge and understanding: knowledge of general criteria for planning the working, technical and production – technical training and education; knowledge of basic definitions, relating to the concepts and models in Engineers pedagogy; understanding of the meaning of using and developing professional literature and modern, as well as working teaching aids for a successful and qualitative training and educational process.
Prenesljive/ključne spretnosti in drugi atributi: načrtovanje, priprava in izvedba različnih oblik usposabljanj; kombiniranje uporab različnih znanj za praktično načrtovanje strategije izobraževalnega dela; izdelava celotnega kurikula za določeno usposabljanje.	Transferable/Key Skills and other attributes: planning, preparing and executing different forms of education and training; combined usage of various knowledge for planning practical strategy for training – educational work; elaboration of complete curriculum for concrete course.
Metode poučevanja in učenja:	**Teaching and learning methods:**
frontalna predavanja, skupinsko delo; izdelava seminarske naloge, diskusije v elektronskem forumu, e-učenje.	frontal lectures, work in small groups; seminar work, discussion in electronic forums, e-learning.

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment methods:**
Način (pisni izpit, ustno izpraševanje, naloge, projekt):		Type (examination, oral, coursework, project):

diskusije v elektronskem forumu,	**20 %**	discussion in electronic forums,
seminarska naloga,	**40 %**	seminar works,
pisniizpit,	**20 %**	written examination,
ustni izpit.	**20 %**	oral examination.

Reference nosilca / Lecturer's references:

DOLENC, Kosta, ABERŠEK, Boris. TECH8 intelligent and adaptive e-learning system : integration into Technology and Science classrooms in lower secondary schools. *Computers & Education*, ISSN 0360-1315. [Print ed.], Mar. 2015, vol. 82, str. 354-365

DOLENC, Kosta, ABERŠEK, Boris, KORDIGEL ABERŠEK, Metka. Online functional literacy, intelligent tutoring systems and science education. *Journal of Baltic science education*, ISSN 1648-3898, 2015, vol. 14, no. 2, str. 162-171

DOLENC, Kosta, PLOJ VIRTIČ, Mateja, ABERŠEK, Boris. Didactic concepts for e-learning. *Journal of Technology and Information Education*, ISSN 1803-6805, 2013, roč. 5, č. 2, str. 36-39

DOLENC, Kosta, PESEK, Igor, ABERŠEK, Boris. Modular and branched structure of individualized intelligent e-learning materials for science and technology subject course. V: LAMANAUSKAS, Vincentas (ur.). *Science, technology, society and education issues - 2013*, (Problems of education in the 21st century, ISSN 1822-7864, vol. 57

DOLENC, Kosta, ABERŠEK, Boris. Integration of design, modeling and visualization in slovenian primary education. 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. 36-42.