



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

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| Predmet: | Biološko raziskovalno delo |
| Course title: | Biological research |

| 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 | / | 4 | 8 |
| Five-year master's degree program Subject Teacher | / | | |

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| Vrsta predmeta / Course type | Obvezni; Obligatory |
| Univerzitetna koda predmeta / University course code: | |

| Predavanja Lectures | Seminar Seminar | Sem. vaje Tutorial | Lab. vaje Laboratory work | Teren. vaje Field work | Samost. delo Individ. work | ECTS |
|------------------------|--------------------|-----------------------|------------------------------|---------------------------|-------------------------------|------|
| 15 | 30 | | 15 | | 90 | 5 |

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| Nosilec predmeta / Lecturer: | Jana AMBROŽIČ-DOLINŠEK |
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| Jeziki / Languages: | Predavanja / Lectures: | slovenski / Slovene |
| | Vaje / Tutorial: | slovenski / Slovene |

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| Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti: | Prerequisites: |
| Pogojev ni. | None. |

Vsebina:

Vključevanje in prenos postopkov znanstveno raziskovalnega dela v vertikalno izobraževanje. Izobraževanje študentov, bodočih učiteljev, za mentorje raziskovalnih nalog, za uvajanje v načel znanstveno-raziskovalnega dela in v reševanju naravoslovnih raziskovalnih problemov primernih starosti in nivoju osvojenega znanja v vertikali osnovnošolskega in srednješolskega izobraževanja. Urjenje v uvajanju, načrtovanju, snovanju, vrednotenju in izvedbi veljavne raziskave.

Content (Syllabus outline):

The integration and transfer of scientific research procedures into the education vertical. Education of students, future teachers, for mentors of research projects, introduction to the principles of scientific research and for guiding in resolving natural sciences problems appropriate for the ages and levels of acquired knowledge in the vertical primary and secondary education. Training in the introduction, design, evaluation and implementation of validated research.

Temeljni literatura in viri / Readings:

Jones A., Reed R., and Weyers J. 2003. Practical Skills in Biology (3rd Edition). Pearson Education Ltd, Harlow, UK
Reed R., and Weyers J., Jones A., Holmes D. 2003. Practical Skills in Biomolecular Sciences (3rd Edition). Pearson Education Ltd, Harlow, UK

Cilji in kompetence:

- Razprava o naravi znanosti in njenih metodah.
- Izbira raziskovalnega področja, primerne za raziskovanje.
- Razlikovanje med knjižnim znanjem in laboratorijskim oziroma terenskim raziskovanjem.
- Seznanjanje z raziskovalnim delom na izbranem področju raziskovanja.

Objectives and competences:

- Discusses the nature of science and its methods.
- Select the research topic feasible for investigation.
- Distinguish between library research and field or laboratory research.
- Introduce with research work on selected research field.

Predvideni študijski rezultati:

Znanje in razumevanje:

- Razumevanje znanstveno raziskovalnega dela.
- Naravoslovna pismenost.
- Poznavanje izbranih eksperimentalnih metod in tehnik dela.

Prenesljive/ključne spretnosti in drugi atributi:

- Urjenje v snovanju, vrednotenju in izvedbi veljavne raziskave.
- Seznanjanje z izbranimi laboratorijskimi metodami dela.
- Varno delo v laboratoriju.

Intended learning outcomes:

Knowledge and understanding:

- Understanding the scientific research.
- Understanding the nature of science.
- Experience in selected experimental methods and techniques.

Transferable/Key Skills and other attributes:

- Practice in initiating, evaluating, and conducting valid scientific research.
- Qualification for work with selected laboratory methods.
- Safe working practice in laboratory.

Metode poučevanja in učenja:

- Predavanja
- Seminarji
- Laboratorijske vaje
- Individualno delo

Learning and teaching methods:

- Lectures
- Seminars
- Laboratory excersises
- Individual work

Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)

- Seminarska naloga
- Ocena izdelave in predstavitve samostojnih raziskovalnih nalog

Delež (v %) /

Weight (in %)

50 %

50 %

Assessment:

Type (examination, oral, coursework, project):

- Seminar work
- Examination of preparation and presentation of research work.

Reference nosilca / Lecturer's references:

AMBROŽIČ-DOLINŠEK, Jana, ŠORGO, Andrej. The importance of education of future elementary teachers about modern biotechnology issues = Pomen izobraževanja bodočih učiteljev razrednega pouka o biotehnologiji. Acta biol. slov.. [Tiskana izd.], 2011, vol. 54, št. 2, str. 85-92. [COBISS.SI-ID 18848264]

ŠORGO, Andrej, AMBROŽIČ-DOLINŠEK, Jana, USAK, Muhammet, ÖZEL, Murat. Knowledge about and acceptance of genetically modified organisms among pre-service teachers: a comparative study of Turkey and Slovenia. Electron. J. Biotechnol., Jul. 2011, vol. 14, no. 4, str. 1-12. <http://dx.doi.org/10.2225/vol14-issue4-fulltext-5>, doi: 10.2225/vol14-issue4-fulltext-5. [COBISS.SI-ID 18530312]

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]

AMBROŽIČ-DOLINŠEK, Jana, RAVNIKAR, Maja, ŽEL, Jana, DEMŠAR, Tina, CAMLOH, Marjana, CANKAR, Katarina, DREO, Tanja. Tissue culture of Pyrethrum (Tanacetum cinerariifolium) and associated microbial contamination = Tkivna kultura bolhača (Tanacetum cinerariifolium) in z njo povezana okužba z mikroorganizmi. Acta biol. slov.. [Tiskana izd.], 2010, vol. 53, št. 1, str. 63-68. [COBISS.SI-ID 17957896]

ŠORGO, Andrej, AMBROŽIČ-DOLINŠEK, Jana. The relationship among knowledge of, attitudes toward and acceptance of genetically modified organisms (GMOs) among Slovenian teachers. *Electron. J. Biotechnol.*, oct. 2009, vol. 12, no. 3, str. 1-13. <http://dx.doi.org/10.2225/vol12-issue4-fulltext-1>, doi: 10.2225/vol12-issue4-fulltext-1. [COBISS.SI-ID 17230088]