



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Didaktika biologije
Course title:	Didactics of Biology

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	/	3	5
Five-year master's degree program Subject Teacher	/		

Vrsta predmeta / Course type

Obvezni / Obligatory

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
30	15		45		90	6

Nosilec predmeta / Lecturer:

dr. Andreja Špernjak

Jeziki /

Predavanja / Lectures:

slovenski / slovene

Languages:

Vaje / Tutorial:

slovenski / slovene

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

Prerequisites:

-Ni pogojev

No prerequisites

Vsebina:

Content (Syllabus outline):

Predavanja:

- predmet didaktike biologije;
- razmerje med splošno in specialnimi didaktikami;
- značilnosti didaktike in metodike poučevanja biologije;
- modeli in strategije poučevanja biologije v Sloveniji in svetu;
- kurikulum in učni načrti biološke vertikale v osnovni in srednjih šolah;
- model pedagoško vsebinskega in tehničnega znanja;
- kompetence v izobraževanju in razvijanje kompetenc pri učencih;
- načrtovanje pouka; zastavljanje standardov; strategije poučevanja in učenja;
- didaktična načela;

Lectures:

- Subject of Didactics of Biology
- Relationship among general and special didactics
- Specificity of didactics of biology and methods used in biology teaching
- Models and strategies of biology teaching in Slovenia and world
- Curricula and syllabuses of biological line in primary and secondary schools
- Pedagogical technological knowledge model
- Competences in education and developing competences with students
- Design in education: goals and objective setting, strategies of teaching and learning
- Didactical guidelines
- Methods of classroom work

- metode dela v razredu;
- oblike dela;
- preverjanje in ocenjevanje šolskega dela;
- proučevalno in problemsko zasnovan pouk;
- učila in učni pripomočki;
- IKT v izobraževanju;
- družbeno naravoslovne teme;
- akcijsko raziskovanje;
- delo razrednika.

Seminarji

- Podajanje znanja: izbrane sodobne teme.

Laboratorijske vaje

- Praktično delo: pisanje priprav, izdelava didaktičnih gradiv, izdelava pripomočkov, multimedija v biološkem izobraževanju, mikropouk,

- Forms of classroom work
- Evaluation and assessment of school work
- Inquiry and problem based teaching
- Equipment and inventory
- ICT in education
- Socioscientific issues
- Action research
- Work of tutor - teacher

Seminars

- Presentations: selected contemporary themes

Laboratory exercises

- Practical work: preparation of lesson plans; preparation of manuals, teaching materials, ~~long~~ multimedia presentations; microteaching

Temeljni literatura in viri / Readings:

- Blažič in sod. 2003. *Didaktika*. Visokošolski učbenik. Novo mesto
- Cvetek, S. 2019. Na študenta osredinjeno poučevanje : priročnik za visokošolske učitelje. Ribniško selo : Akadem.
- Holcar Brunauer in sod. 2016. Formativno spremljanje v podporo učenju: priročnik za učitelje in strokovne delavce. Ljubljana: Zavod Republike Slovenije za šolstvo
- Eschenhagen D., Katmann U., Rodi D. 1998. *Fachdidaktik Biologie*. 4. izdaja, ur. Ulrich Kattman. Aulis Verlag Deubner. Koeln
- Marzano et al.(2000). *Classroom instruction that works*. McREL: <http://www.mcrel.org/topics/products/110/>
- Izbrana poglavja iz: Handbook of Research on Science Education. Ed. Norman G. Lederman, Dana L. Zeidler, Judith S. Lederman. 2023. Routledge.
- Revija Journal of Biological Education
- Revija American Biology Teacher
- Revija Didactica Slovenica - Pedagoška obzorja
- Revija Acta Biologica Slovenica
- Učni načrti in učbeniki ter delovni zvezki biološke vertikale

Cilji in kompetence:

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

- teoretična in praktična znanja s področja didaktike in metodike biološkega izobraževanja;
- spretnosti za pripravo, izvedbo in ovrednotenje dela učencev ter lastnega dela pri pouku biologije;
- znanja potrebna za vodenje razreda in šolske dokumentacije.
- razumevanje pomena stalnega strokovnega izpopolnjevanja in samoevalvacije s stališča kritičnega praktika.

Objectives and competences:

- After completing the course a prospective teacher should possess:
- Theoretical and practical knowledge on the field of didactic and methodics on biology education;
- Skills needed for preparation, performance and assessment of student's and his/her own work in biology teaching.
- Knowledge needed for leadership of the classroom and school administration;
- Understanding of the meaning of lifelong learning and self-evaluation from the viewpoint of critical practitioner.

Predvideni študijski rezultati:

Intended learning outcomes:

Znanje in razumevanje:

poznavanje in razumevanje pedagoško didaktično vsebinsko- tehnoloških znanj potrebnih za učinkovito izvajanje in vodenje pedagoškega procesa;

- uporaba biološkega znanja v različnih kontekstih izobraževanja;
- opisati dano situacijo z uporabno ustrezno biološke terminologije;
- načrtovanja, izvedbe in ovrednotenja pouka biologije, biologiji sorodnih predmetov (npr. mikrobiologija, anatomija, ipd.) ter okoljskih predmetov;
- bioloških konceptov in postopkov v učnem okolju;
- sposobnost reševanje bioloških in drugih problemov povezanih s poučevanjem biologije z uporabo informacijsko-komunikacijske tehnologije;
- obvladovanje strategij potrebnih za poučevanje biologije;
- sposobnost ovrednotenje rezultatov lastnega dela po načelih akcijskega raziskovanja;
- poznavanju svojega poklica in predpisov, ki urejajo delovanje šole.

Prenesljive/ključne spretnosti in drugi atributi:

Uporaba pedagoško didaktično- Vsebinsko tehnoloških znanj potrebnih za učinkovito izvajanje in vodenje pedagoškega procesa;

- Sposobnost povezovanja bioloških znanj z znanji drugih strok in ved.
- Posredovanje znanj, spretnosti in stališč v kontekstu primernih oblik;
- Sposobnost voditi in usmerjati razpravo v razredu o sodobnih družbeno-naravoslovnih temah.
- znanja potrebna za vodenje razreda in šolske dokumentacije.

Metode poučevanja in učenja:

Predavanja

- Seminar
- Laboratorijske vaje
- Individualno delo

Načini ocenjevanja:

Pisni izpit	100	Written exam
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Knowledge and understanding:

- Knowledge about and understanding of technological pedagogical content knowledge needed for successful implementation of pedagogical process;
- Use of biological knowledge in different contexts;
- describe given situation with the usage of appropriate biological terminology;
- Planning, performance and assessment of biology, biological sciences as Microbiology or Anatomy and environmental subjects;
- Biological concepts and principles in learning environment;

Competence in solving biological and other problems connected with biology education with the use of ICT.

- Strategies used in biology teaching;
- Know-how in assessment of own work as action research;
- Knowledge about profession of biology teacher and regulations about school work

Transferable/Key Skills and other attributes:

Usage of pedagogical content technological knowledge needed for successful performance and leading of pedagogical process;

- Competence in connecting biological knowledge with knowledge from other disciplines;
- Transfer of knowledge, skills and attitudes in appropriate context;
- Ability to lead a classroom discussion about contemporary socioscientific issues;
- Ability to lead and manage classroom;
- Work with ICT.

Learning and teaching methods:

Lectures

- Seminar
- Laboratory excersises
- Individual work

Assessment:**Opombe:**

Ocena kolokvija iz vaj (opravi / ni opravi)
Seminar (opravi / ni opravi)

Comments:

Grade from laboratory work (passed / did not pass)

Seminaire (passed / did not pass)

Reference nosilca / Lecturer's references:

ŠPERNJAK, A., RUPAR, N. Is digital technology necessary in practical field work in biology?. V: ABERŠEK, Boris (ur.), COTIČ, Mara (ur.). *Challenges and transformation of education for 21st century schools*. Newcastle-upon-Tyne: Cambridge Scholars Publishing, 2024. Str. 147-172

LANG, V., ŠPERNJAK, A., ŠORGO, A. The relationship between the daily use of digital technologies and the reading and information literacy skills of 15-year-old students. *European journal of educational research*. 2024, vol. 13, no. 1, str. 43-54.

ŠPERNJAK, A., PUHMEISTER JUG, A., ŠORGO, A. Public opinions and knowledge about microorganisms. *Research in science & technological education*. 2023, vol. 41, no. 2, str. 800-818.

DOLENŠEK, J., KOS, T., STOŽER, A., ŠPERNJAK, A. (avtor, korespondenčni avtor). Teachers perception of the use on a low-cost pulse rate sensor for biology education. *Advances in physiology education*. Jun. 2022, vol. 46, iss. 2, str. 238-245.

ŠORGO, A., ŠPERNJAK, A. Biology content and classroom experience as predictors of career aspirations. *Journal of Baltic science education*. 2020, vol. 19, no. 2, str. 317-332.