

**UČNI NAČRT PREDMETA / COURSE SYLLABUS**

<b>Predmet:</b>	NARAVOSLOVNI VIDIKI TRAJNOSTNEGA RAZVOJA IN ZELENEGA PREHODA
<b>Course title:</b>	Aspects of natural sciences for sustainable development and green transition

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Visokošolski strokovni študijski program prve stopnje Predšolska vzgoja	/	3	poletni
Visokošolski strokovni študijski program prve stopnje Predšolska vzgoja	/	3	zimski

**Vrsta predmeta / Course type**

D - Splošni izbirni predmet

**Univerzitetna koda predmeta / University course code:**

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Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
45	0	15		0	60	4

**Nosilec predmeta / Lecturer:**

prof. dr. Iztok Devetak

**Jeziki /****Predavanja / Lectures:** slovenščina**Languages:****Vaje / Tutorial:** slovenščina**Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:**

Ni posebnih pogojev.

**Prerequisites:**

No special requisites.

**Vsebina:**

1. CILJI TRAJNOSTNEGA RAZVOJA POVEZANI Z NARAVOSLOVJEM (CTR 2: odprava lakote; CTR 3: zdravje in dobro počutje, CTR 6: čista voda in sanitarna ureditev, CTR 7: cenovno dostopna in čista energija; CTR 13: podnebni ukrepi; CTR 14 življenje v vodi; CTR 15 življenje na kopnem).

2. NARAVOSLOVNE OKOLJSKE VEDE (kemija okolja, zelena kemija, ekologija, definicije biotske pestrosti)

3. PLANETARNE MEJE (pomen za varovanje okolja).

4. CTR 2: KMETIJSTVO IN BIOTSKA PESTROST (kamnine, prst, bio-geo-kemični cikli snovi na Zemlji, pomen kmetijstva, proizvodnja hrane, vplivi kmetijstva na okolje z vidika biotske pestrosti).

5. CTR 3: ZDRAVJE IN DOBRO POČUTJE LJUDI IN ŽIVALI (dobrobit in zaščita živali, odnos človeka do živali, neverbalna komunikacija in rokovanje z

**Content (Syllabus outline):**

1. NATURE-RELATED SUSTAINABLE DEVELOPMENT GOALS (SDG 2: ending hunger, SDG 3: health and well-being, SDG 6: clean water and sanitation, SDG 7: affordable and clean energy, SDG 13: climate action, SDG 14: living in water, and SDG 15: living on land).

2. NATURAL ENVIRONMENTAL SCIENCES (environmental chemistry, green chemistry, ecology, definitions of biodiversity).

3. PLANETARY BOUNDARIES (significance for environmental protection).

4. SDG 2: AGRICULTURE AND BIOTIC DIVERSITY (rocks, soil, bio-geo-chemical cycles of substances on Earth, importance of agriculture, food production, impacts of agriculture on the environment from perspective of biodiversity).

5. SDG 3: HEALTH AND WELL-BEING OF PEOPLE AND ANIMALS (welfare and protection of

živalmi)

6. CTR 6; CTR 14: VODE (trdota vode, pH vode, posledice onesnaževanja vode, eutrofikacija, sedimenti, zakisanje morji, mikroplastika, vplivi na vodna okolje z vidika biotske pestrosti).

7. CTR 7: ENERGIJA (osnovni naravoslovni principi delovanja tradicionalnih in alternativnih virov energije, hidroelektrarne, termoelektrarne, jedrske elektrarne, vetrne elektrarne, sončne elektrarne).

8. CTR 13: OZRAČJE (vreme in podnebje, procesi v atmosferi, vzroki podnebnih sprememb – povečan učinek tople grede, druge posledice onesnaženja - fotokemični smog, destrukcija stratosferskega ozona, kisle padavine).

9. CTR 15: ODPADKI (nevarne snovi v okolju kot posledica delovanja človeka, vplivi na kopenska okolja z vidika biotske pestrosti).

animals, human-animal relationship, non-verbal communication and handling of animals)

6. SDG 6: WATER (water hardness, water pH, consequences of water pollution, eutrophication, sediments, sea acidification, microplastics effects on water areas from biodiversity perspective).

7. SDG 7: ENERGY (basic natural principles of operation of traditional and alternative energy sources, hydroelectric power plants, thermal power plants, nuclear power plants, wind power plants, solar power plants).

8. SDG 13: ATMOSPHERE (weather and climate, processes in the atmosphere, causes of climate change - increased greenhouse effect, other consequences of pollution - photochemical smog, destruction of stratospheric ozone, acid precipitation).

9. SDG 15: WASTE (hazardous substances in the environment as a result of human activity, effects on land from diversity perspective).

#### Temeljni literatura in viri / Readings:

1. Lučka Kajfež Bogataj (2017). Planet, ki ne raste, Cankarjeva založba. (izbrana poglavja, 309 str.)
2. Kržan, A. Trebše, P., Rodela, R., Torkar, G., Šprajcar, M. (2014). Priročnik o ravnanju z odpadki, Consorzio per l'AREA di ricerca scientifica e tecnologica di Trieste (Italija), 92 str. (izbrana poglavja).
3. Baird, C., Cann, M. (2005). Environmental Chemistry. New York: W. H. Freeman and Company. (izbrana poglavja, 652 str.)

#### Cilji in kompetence:

Splošne (generične) kompetence visokošolskih diplomantov:

1. Spodobnost komuniciranja, sodelovalno/timsko delo.
2. Sintetično, analitično, ustvarjalno mišljenje ter reševanje problemov.
3. Fleksibilna uporaba znanja v praksi.
4. Avtonomnost, (samo)kritičnost, (samo)refleksivnost, (samo)evalviranje in prizadevanje za kakovost.
5. Splošna razgledanost, sposobnost komuniciranja s strokovnjaki iz drugih strokovnih in znanstvenih področij.

Predmetno-specifične kompetence diplomantov UL PeF:

1. Poznavanje vsebine in metodike področja.
2. Interdisciplinarno povezovanje vsebin.
3. Poznavanje vseh področij dejavnosti v vrtcu in predmetov v 1. razredu devetletne OŠ ter njihovo (interdisciplinarno) povezovanje v procesu učenja.

Predmetno specifične kompetence slušateljev:

1. Razumevanje pomena trajnostnega razvoja

#### Objectives and competences:

General (generic) competences of all graduates:

1. Ability to communicate, collaborative/team work.
2. Synthetic, analytical, creative thinking and problem solving.
3. Flexible use of knowledge in practice.
4. Autonomy, (self)criticism, (self)reflexivity, (self)evaluation and striving for quality.
5. General knowledge, ability to communicate with experts from other professional and scientific fields.

Subject-specific competences of the graduates of UL PeF:

1. Knowledge of the content and methodology of the field.
2. Interdisciplinary of the contents.
3. Knowledge of all areas of activities in kindergarten and subjects in the 1st grade of a nine-year elementary school and their (interdisciplinary) integration in the learning process.

Subject-specific competences of the graduates of subject:

1. Understanding the importance of

in planetarnih mej za ohranjanje okolja.

2. Razumevanje mehanizmov osnovnih okoljskih pojavov z vidika kemijskih in fizikalnih sprememb.
3. Razumevanje vplivov antropogenih dejavnikov na okolje.
4. Razumevanje globalne okoljske probleme.

sustainable development and planetary boundaries for the preservation of the environment.

2. Understanding the mechanisms of basic environmental phenomena from the point of view of chemical and physical changes.
3. Understanding the impact of anthropogenic factors on the environment.
4. Understanding global environmental problems.

**Predvideni študijski rezultati:**

Znanje in razumevanje:

1. pozna pomen trajnosti in razume njene povezave z drugimi vedami o okolju in vplive na zdravje ljudi in živali;
2. razume osnovne naravoslovne pojave v atmosferi in pozna vplive človekove dejavnosti nanje;
3. razume osnovne naravoslovne pojave v vodah in pozna vplive človekove dejavnosti nanje;
4. razume osnovne naravoslovne pojave v tleh in vplive človekove dejavnosti nanje;
5. razume kroženje snovi na Zemlji in njihov pomen za organizme.

Uporaba:

1. zna teme trajnosti in varovanja okolja implementirati na ustrezni stopnji vzgoje in izobraževanja otrok.

Refleksija:

1. skozi kritično refleksijo ovrednoti poročanja medijev o globalnih okoljskih problemih in naključnih okoljskih incidentih.

Prenosljive spretnosti:

1. kritično bere in piše strokovna besedila na področju naravoslovnih vidikov trajnosti in varovanja okolja;
2. konstruktivno uporabi usvojena znanja v praksi v vrtcu in šoli.

**Intended learning outcomes:**

Knowledge and understanding:

1. know the meaning of sustainability and understand its connections with other environmental sciences and the effects on human and animal health.
2. understand basic natural phenomena in the atmosphere and the effects of human activity on them.
3. understands basic natural phenomena in water and the effects of human activity on them.
4. understands the basic natural phenomena in the soil and the effects of human activity on them.
5. understands the cycles of substances on Earth and their importance for organisms.

Application:

1. know how to implement the topics of sustainability and environmental protection at the specific educational level.

Reflection:

1. through critical reflection, evaluate media reporting on global environmental problems and random environmental incidents.

Transferable skills:

1. critically read and write professional texts in the field of natural science aspects of sustainability and environmental protection.
2. constructively use acquired knowledge in practice in kindergarten and school.

**Metode poučevanja in učenja:**

1. Predavanja z diskusijo in uporabo IKT.
2. Individualno delo na nalogah predavanj.
3. 15ur vaj se izvede kot laboratorijske in terenske vaje (velikost skupin do 15 študentov).

**Learning and teaching methods:**

1. Lectures with discussions using ICT.
2. Individual work project work with presentation.
3. Laboratory and field work (group size max. 15 students).

**Načini ocenjevanja:**

**Delež (v %) /  
Weight (in %)**

**Assessment:**

Pisni izpit.	50	Written exam.
Ustni preizkus znanja laboratorijskih in terenskih vaj.	25	Oral exam on laboratory and field work.
Individualno delo na nalogah predavanj.	25	Individual work lecture on assignments

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**Reference nosilca / Lecturer's references:**

prof. dr. Iztok Devetak:

1. MAJER KOVAČIČ, Janja, SLAPNIČAR, Miha, DEVETAK, Iztok. Assessment of the 14- and 15-year-old students' understanding of the atmospheric phenomena. Acta chimica slovenica. [Spletna izd.]. 2019, vol. 66, no. 3, str. 659-667
2. KLEMEN, Taja, DEVETAK, Iztok. Introduction of hydrosphere environmental problems in low secondary school chemistry lessons. V: Bridging ideas between Asia and Europe for promoting education for sustainable development in higher education: programme book. Core-to-core Programme Joint Seminar 2022 Bridging ideas between Asia and Europe for promoting education for sustainable development in higher education, 14-17 September 2022, Ljubljana, Slovenia. Ljubljana: [Faculty of Education], 202
3. RIBIČ, Luka, SLAPNIČAR, Miha, DEVETAK, Iztok. Knowledge and misconcepts about the lithosphere and pedosphere among 9th grade primary school students in Slovenia. V: Bridging ideas between Asia and Europe for promoting education for sustainable development in higher education : programme book. Core-to-core Programme Joint Seminar 2022 Bridging ideas between Asia and Europe for promoting education for sustainable development in higher education, 14-17 September 2022, Ljubljana, Slovenia. Ljubljana: [Faculty of Education], 2022.
4. TORCAR, Gregor, VINKO, Luka, VOGRINC, Janez, DEVETAK, Iztok. Development of the Slovene pre-service teachers' professional competencies for education for sustainable development. V: Conference book. [Okayama: Okayama University], 2019. Str. 42-43.
5. VOGRINC, Janez, DEVETAK, Iztok, VINKO, Luka, TORCAR, Gregor. Reshaping of teacher education studyprograms at the Faculty of Education University of Ljubljana towards education for sustainable development. V: Conference book. [Okayama: Okayama University], 2019. Str. 53.