

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet: VARSTVO OKOLJA I
Course title: ENVIRONMENTAL PROTECTION I

Študijski program in stopnja Study Programme and Level	Študijska smer Study Field	Letnik Academic Year	Semester Semester
UŠP Tehniška varnost, 1. stopnja	/	2.	3.
USP Technical Safety, 1 st Cycle	/	2 nd	3 rd

Vrsta predmeta / Course Type

obvezni / Mandatory

Univerzitetna koda predmeta / University Course Code:

TV112

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
45	15	15 LV	/	/	75	5

Nosilec predmeta / Lecturer:

prof. dr. Andreja Žgajnar Gotvajn /
Dr. Andreja Žgajnar Gotvajn, Full Professor

Jeziki / Languages:

Predavanja / Lectures: Slovenski / Slovenian

Vaje / Tutorial: Slovenski / Slovenian

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

Študent oz. kandidat mora imeti predmet opredeljen kot študijsko obveznost.

Prerequisites:

The course has to be assigned to the student.

Vsebina:

Uvod, nekatere definicije in pojmi, ekologija, varstvo okolja, vrste ekosistemov, zakonitosti rasti populacij, mehanizmi kroženja snovi (hidrosfera, litosfera, atmosfera). Vrste onesnaženja, vplivi onesnaženja na okolje, transport in pretvorbe onesnaženja v okolju, hrup, elektromagnetno valovanje, svetlobno onesnaževanje. Globalni okoljski problemi. Povezava med okoljem in delovnim okoljem. Industrija in okolje. Posegi v okolje. Zakonodaja na področju okolja. Stanje okolja v Sloveniji.

Zrak: sestava atmosfere, procesi v atmosferi, omejevanje in nadzor emisij in imisij, zrak v

Content (Syllabus Outline):

Introduction, terms and definitions, ecology, environmental protection, functioning of ecosystems, population growth, environmental transport of substances (hydrosphere, lithosphere, atmosphere). Different types of pollution, environmental impact of pollutants, transportation pathways and environmental fate, noise, electromagnetic radiation, light pollution. Global environmental problems. Working and natural environment. Environmental impact of industry, environmental legislation. Current status of environment in Slovenia.

Air: Composition and processes in atmosphere,

zaprtih prostorih, čistilne naprave.

Vode: vodni cikel, zaloge vode, površinske vode, podtalnice, nadzor vodotokov, pitna voda, nadzor in priprava pitne vode, najpogostejši onesnaževalci vod, industrijski onesnaževalci. Odpadne vode: čiščenje odpadnih vod, čistilne naprave, varčevanje z vodo, ponovna uporaba.

Odpadki: vrste odpadkov, komunalni odpadki, biorazgradljivi odpadki, inertni odpadki, nevarni odpadki, jedrski odpadki, postopki ravnanja z odpadki, recikliranje, obdelava, energetska izraba odpadkov, odlaganje odpadkov, sežiganje odpadkov.

Energetika in onesnaževanje. Obnovljivi in neobnovljivi viri, učinkovita raba energije, problemi.

Obisk objektov, kjer študenti na praktičnih primerih utrjujejo teoretično znanje.

reduction of emissions, indoor air pollution, treatment systems.

Water: Hydrological cycle, surface waters, underground water, monitoring and control of surface and drinking water, typical important pollutants, wastewater treatment, reuse and recovery.

Solid wastes: Sources and types of wastes, municipal and industrial wastes, management and processing of inert, biodegradable, hazardous and radioactive waste, recycling, reuse and recovery concepts and approaches, materials and energy recovery of solid wastes, landfilling.

Energy and environment: conventional and renewable energy sources, efficient energy use, local and global environmental problems related to energy consumption.

Field trips to connect theoretical to practical knowledge.

Temeljna literatura in viri / Readings:

- Masters, G., Introduction to environmental engineering and science, 3rd Edition, Prentice Hall, 2008, 708 str. (60%).
- Worrell, W.A., Vesilind, P.A., Solid Waste Engineering, 2nd Edition, Cengage Learning, 2012, 401 str. (20%).
- Zagorc-Končan, J., Žgajnar Gotvajn, A., Zbirka nalog iz ekološkega inženirstva, UL, FKKT, 2008, 46 str (20%).

Cilji in kompetence:

Predmet bo študentom dal osnovne informacije o definicijah in principih varstva okolja. Študentje se bodo temeljna znanja iz naravoslovnih predmetov naučil uporabljati pri varstvu okolja in se spoznali s problemi onesnaževanja zemlje, vode in zraka. Spoznali in razumeli bodo osnovne globalne probleme.

Objectives and Competences:

Knowledge on basic definitions and concepts of environmental protection. Basic knowledge on basic sciences will be upgraded to understand problems related to water, air and soil pollution. Knowledge and understanding of fundamental global problems will be acquired.

Predvideni študijski rezultati:

Intended Learning Outcomes:

<p><u>Znanje in razumevanje</u> Študent pridobi osnovna teoretična znanja, ki so potrebna za razumevanje različnih procesov v okolju. Spoznal bo osnovne okoljske probleme na lokalni in globalni ravni, načine in pristope k obravnavanju in reševanju okoljskih problemov. Poznal bo sodobne pristope k varovanju okolja, ki temeljijo na trajnostnih principih in soodvisnost procesov in dejavnikov. Razumel bo pomen etičnih, pravnih in ekonomskih načel na področju varstva okolja. Spoznal se bo z okoljskimi problemi in stanjem v Sloveniji.</p>	<p><u>Knowledge and Comprehension</u> Advanced theoretical knowledge and deeper understanding of environmental processes. Knowledge on basic local and global environmental problems and fundamentals of basic environmental problems solving approaches. Modern trends in environmental remediation and protection. Understanding of ethical, legal and economy aspects of environmental protection. Awareness of important environmental problems in Slovenia.</p>
<p><u>Uporaba</u></p>	<p><u>Application</u></p>
<p><u>Refleksija</u> Z pridobljenimi znanji bo kritično presojal lokalne in globalne okoljske probleme. Sposoben bo poiskati povezavo med teorijo in problemi v lastni okolici.</p>	<p><u>Reflection</u> Ability to discuss and assess local and global environmental problems. Ability to connect theoretical knowledge and actual local and regional environmental problems.</p>
<p><u>Prenosljive spretnosti</u> Pri predmetu bo študent razširil temeljna znanja, znal bo uporabljati tujo in domačo literaturo, izračunati in primerno interpretirati ter ovrednotiti različne osnovne okoljske probleme. Razvil bo spretnosti uporabe ustnega in pisnega načina poročanja.</p>	<p><u>Skill-transference Ability</u> Ability to search, select and apply different types of literature. Ability to apply theoretical knowledge to understand environmental problems. Development of oral and literate skills.</p>

Metode poučevanja in učenja:

<p>Predavanja Seminarji Seminarske vaje: Ekskurzije: jedrski reaktor in razstava o ravnanju z jedrskimi odpadki, predelava odpadkov, čistilne naprave Laboratorijske vaje</p>

Learning and Teaching Methods:

<p>Lectures Seminars Field trips: nuclear reactor, recycling center and landfill, conventional wastewater treatment plant Laboratory work</p>

Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

<p>Pisni in ustni izpit Laboratorijske vaje Opravljene laboratorijske vaje in projektna naloga so pogoj za opravljanje izpita</p>	<p>80% 20%</p>	<p>Written and oral exam Laboratory work Accomplished laboratory work and project work are a prerequisite to exam attendance.</p>
---	----------------------------------	---

Reference nosilca / Lecturer's References:

<p>- ŽGAJNAR GOTVAJN, Andreja, KALČÍKOVÁ, Gabriela. Delamination of plastic-coated waste paper by enzymes of the white rot fungus <i>Dichomitus squalens</i>. Journal of environmental management.</p>
--

Dec. 2018, vol. 228, str. 165-168.

- BOŠEVSKI, Igor, KALČÍKOVÁ, Gabriela, CERKOVNIK, Janez, **ŽGAJNAR GOTVAJN, Andreja**. Ozone as a pretreatment method for antibiotic contaminated wastewater and sludge. *Ozone: science & engineering*. [Print ed.]. 2020, vol. 42, iss. 2, str. 128-135

- KORICA, Predrag, CIRMAN, Andreja, **ŽGAJNAR GOTVAJN, Andreja**. Are we reversing the trend in waste generation : panel data analyses of municipal waste generation in regard to the socio-economic factors in European countries. *Economic and business review*. 2020, vol. 22, no. 3, str. 323-343.

UL
EFKKT