

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	OKOLJSKA TVEGANJA
Course Title:	ENVIRONMENTAL RISK

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

Vrsta predmeta / Course Type: obvezni / Mandatory

Univerzitetna koda predmeta / University Course Code: TV2A3

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje Work	Druge oblike študija	Samost. delo Individual Work	ECTS
45	15	15 SV	/	/	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:
Evropska in slovenska zakonodaja na področju voda, zraka, tal, odpadkov. Zakonodaja na področju okolju prijaznih tehnologij, okoljski ISO standardi, IPPC smernica. Seveso smernice. Veliki industrijski sistemi. Okoljska tveganja ter metodologije za identifikacijo in vrednotenje okoljskih tveganj. Ocenjevanje življenjskih ciklov procesov, okoljska tveganja povezana z zelenimi tehnologijami. Okoljske nezgode in njihove posledice ter možnosti sanacij. Lokalni, regionalni in globalni problemi stanja okolja. Scenariji in primeri okoljskih nezgod. Tveganje posameznika in skupinsko tveganje, obvladovanje tveganj. Obstoječa računalniška orodja in njihova uporaba. Izdelava varnostnih

Content (Syllabus outline):
European and Slovene legislation for water, air, soil pollution and solid wastes. Legislation in the field of environmental friendly technologies, environmental ISO standards, IPPC Directive, Seveso directives. Large industrial systems. Environmental risks and methodologies for identification of environmental risks. Assessment of environmental risk of green technologies. Environmental accidents, their consequences and mitigation possibilities. Local, regional and global environmental problems. Scenarios of environmental accidents, case studies of environmental accidents. Assessing risk of individuals and group. Computer tools and their application.

poročil, interpretacija rezultatov varnostnih analiz, upravljanje z okoljskimi tveganji.

Safety reports, interpretation of the results of safety analyses, management of environmental risks.

Temeljna literatura in viri / Readings:

1. Lerche, I; Glaesser, W.: Environmental Risk Assessment: Quantitative measures, anthropogenic influences, human impact, Springer, 2006, 341 str. (40%)
2. AIChE: Guidelines for Technical Management of Chemical Process Safety, New York 1989 (10%).
3. Sutton, I: Process Reliability and Risk Management, Van Nostrand New York, 1992 (10%).

Cilji in kompetence:

Študentje naj bi spoznali, kako zbrati informacije o okoljskih tveganjih ter kako te informacije lahko koristijo pri načrtovanju preventivnih ukrepov za zagotavljanje varnosti v okolju in kako lahko s pomočjo vedenja o okoljskih tveganjih lahko načrtujemo svoje dejavnosti, da bodo varne in tudi prijazne do okolja ter da bodo ob morebitnih okoljskih nezgodah posledice čim manjše.

Objectives and Competences:

Students should learn how to gather information on environmental risks and how this information can be useful in planning preventive measures to ensure the safety of the environment and how you can use knowledge about environmental risks can plan their activities to a safe and friendly environment and to will be minimized the potential environmental consequences of accidents.

Predvideni študijski rezultati:

Znanje in razumevanje

Študentje naj bi pridobil osnovna teoretska in praktična znanja, ki so potrebna za razumevanje okoljskih problemov in tveganj, ki so z njimi povezana. Razumel bo kako so posamezni elementi tveganj vpeti v odločitveni proces glede tehnoloških pristopov k okoljskim tveganjem.

Intended Learning Outcomes:

Knowledge and Comprehension

Students should acquire basic theoretical and practical knowledge necessary for understanding environmental problems and risks that are associated with them. They will understand how the individual elements of risk embedded in the decision-making process with respect to technological approaches to environmental risks.

Uporaba

Znal bo uporabljati tako zakonodajo kot tudi teoretične in praktične pristope k reševanju problemov okoljskih tveganj in se na njihovi osnovi odločati o obrambnih in blažilnih mehanizmih, ki se jih za konkreten primer uporabi.

Application

He will be able to use both the law as well as theoretical and practical approaches to solving the problems of environmental risks and to decide based on their defense and mitigation mechanisms, which are for the specific application.

Refleksija

Teoretska in praktična znanja bo lahko študent uporabil pri reševanju praktičnih in teoretskih problemov. Spoznanja o zmogljivostih in omejitvah metod za oceno okoljskih tveganja ter kritično uporabo numeričnih modelov za oceno okoljskih posledic za dobro odločanje.

Analysis

The student in solving practical and theoretical problems will use theoretical and practical knowledge. Knowledge of the capabilities and limitations of methods to assess environmental risks and critical use of numerical models to assess the environmental consequences of good decision-making.

Prenosljive spretnosti

Študent bo pridobil analitične spretnosti in logično razmišljanje kot tudi spretnosti za učinkovito identifikacijo nevarnih scenarijev.

Skill-transference Ability

Students will gain analytical skills and logical thinking as well as skills for effective identification of accident scenarios.

Metode poučevanja in učenja:

Predavanja
Seminarske vaje
Seminarska naloga s področja okoljskih tveganj

Learning and Teaching Methods:

Lectures
Tutorials
Coursework in the field of environmental risks

Načini ocenjevanja:

Pisni izpit
Seminarska naloga

Delež (v %) /

Weight (in %)

Assessment:

Written exam
Coursework

Reference nosilca / Lecturer's references:

1. KORICA, Predrag, POŽGAJ, Đurđica, CIRMAN, Andreja, ŽGAJNAR GOTVAJN, Andreja. Decomposition analyses of the municipal waste generation and management in Croatian and Slovenian regions. *Journal of material cycles and waste management : official journal of the Japan Society of Waste Management Experts*. Jan. 2018, vol. 20, iss. 1, str. 254-265.
2. RAČIČ KOZMUS, Aleksandra, ŽGAJNAR GOTVAJN, Andreja, LOBNIK, Aleksandra, NOVAK, Nina, KLASINC, Aljaž, ZUPANČIČ, Gregor Drago. Anaerobic treatment to improve sludge recovery at a deinked fiber pulp and paper mill. *Tappi journal*. Feb. 2016, vol. 15, no. 2, str. 127-137, ilustr.
3. MARQUES, Susana, MESTRE, Ana S., MACHUQUEIRO, Miguel, ŽGAJNAR GOTVAJN, Andreja, MARINŠEK, Marjan, CARVALHO, Ana Paula. Apple tree branches derived activated carbons for the removal of β -blocker atenolol. *Chemical engineering journal*. Aug. 2018, vol. 345, str. 669-678, ilustr.