

## UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Predmet:</b>	OKOLJSKA TVEGANJA
<b>Course Title:</b>	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 <sup>nd</sup> Cycle	/	2 <sup>nd</sup>	3 <sup>rd</sup>

**Vrsta predmeta / Course Type:** izbirni / Elective

**Univerzitetna koda predmeta / University Course Code:** TV2A3

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje Work	Druge oblike študija	Samost. delo Individual Work	ECTS
75	30	45 SV	/	/	150	10

**Nosilec predmeta / Lecturer:** doc. dr. Jože Šrekl/ Dr. Jože Šrekl, Associate Professor  
doc. dr. Mitja Kožuh/ Dr. Mitja Kožuh, Associate Professor

**Jeziki / Languages:** slovenski / Slovenian  
**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:**

Okoljska zakonodaja ter okoljska tveganja  
 Metodologija za identifikacijo okoljskih tveganj  
 Scenariji okoljskih nezdod  
 Modeliranje okoljskih nezdod  
 Metodologije za vrednotenje posameznih okoljskih tveganj  
 Računalniška orodja in njihova uporaba  
 Odločanje v negotovosti na osnovi nepopolnih podatkov  
 Odločitvena drevesa in diagrami vpliva  
 Tveganje posameznika  
 Skupinsko tveganje  
 Izdelava varnostnih poročil  
 Interpretacija rezultatov varnostnih analiz in vodenje okoljskih tveganj

**Content (Syllabus outline):**

Environmental legislation and environmental risks  
 The methodology for identifying environmental risks  
 Scenarios of environmental accidents  
 Modelling of environmental accidents  
 Methodologies for assessing individual environmental risks  
 Computer tools and their use  
 Decision making under uncertainty based on incomplete data  
 Decision trees and influence diagrams  
 Individual risk  
 Collective risk  
 Making of safety reports

### Temeljna literatura in viri / Readings:

#### Glavna literatura:

- AIChE: Guidelines for Technical Management of Chemical Process Safety, New York 1989
- Ian Sutton: Process Reliability and Risk Management, Van Nostrand New York, 1992

#### Pomožna literatura:

- J.X.Wang, M.L.Roush: What Every Engineer should know about Risk Engineering and Management, Marcel Decker INC. , New York 2000
- ACSNI: Organizing For Safety, Health and Safety Commission, April 1993,
- Lloyd's Register The Engineering Council: Guidelines on Risk Issues, UK 1993
- Perrow C.: Normal Accidents, Living with High-Risk Technologies, Basic Books, New York, 1985
- Arendt et al:Evaluating Process Safety in the Chemical Industry, A Manager's Guide to Quantitative Risk Assessment, Chemical Manufacturers Association, Washington, USA, 1989
- Clemen, Reilly: Making Hard Decisions, PWS- Kent Publishing Company, 1991

### 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

#### 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

osnovi odločati o obrambnih in blažilnih mehanizmih, ki se jih za konkreten primer uporabi.	decide based on their defense and mitigation mechanisms, which are for the specific application.
<u>Refleksija</u> Teoretska in praktična znanja bo lahko študent uporabil pri reševanju praktičnih in teoretskih problemov. Spoznanja o zmogljivostih in omejitvah metod za oceno okoljskih tveganj ter kritično uporabo numeričnih modelov za oceno okoljskih posledic za dobro odločanje.	<u>Analysis</u> 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.
<u>Prenosljive spretnosti</u> Študent bo pridobil analitične spretnosti in logično razmišljanje kot tudi spretnosti za učinkovito identifikacijo nezgodnih scenarijev.	<u>Skill-transference Ability</u> 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
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#### Learning and Teaching Methods:

Lectures Tutorials Coursework in the field of environmental risks
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#### Načini ocenjevanja:

Izpit pisni. Ocene: 6-10 pozitivno
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Delež (v %) /

Weight (in %) **Assessment:**

Written exam
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#### Reference nosilca / Lecturer's references:

<p>doc. dr. Jože Šrekl (<b>akreditirano 2012</b>)</p> <p>- <b>ŠREKL, Jože</b>, GOLOB, Janvit. New approach to calculate the probability of ignition. <i>J. loss prev. process ind.</i>, 2011, vol. 24, no. 3, str. 288-291, doi: 10.1016/j.jlp.2010.09.006. [COBISS.SI-ID 34976773]</p> <p>- <b>ŠREKL, Jože</b>. Safe behavior and level of knowledge regarding safe work practices on farms. <i>Res. j. chem. sci.</i>, 2011, vol. 1, no. 6, str. 15-19. <a href="http://www.isca.in/rjcs/Archives/vol1/16/03.pdf">http://www.isca.in/rjcs/Archives/vol1/16/03.pdf</a>. [COBISS.SI-ID 35368197]</p> <p>- <b>ŠREKL, Jože</b>, GOLOB, Janvit. Impact of the buildings areas on the fire incidence. <i>Acta chim. slov.</i>. [Tiskana izd.], 2010, vol. 57, no. 1, str. 118-122. <a href="http://acta.chem-soc.si/57/57-1-118.pdf">http://acta.chem-soc.si/57/57-1-118.pdf</a>. [COBISS.SI-ID 33808645]</p> <p>doc. dr. Mitja Kožuh</p> <p>- AL-MANSOUR, Fouad, <b>KOŽUH, Mitja</b>. Risk analysis for CHP decision making within the conditions of an open electricity market. <i>Energy (Oxford)</i>. [Print ed.], 2007, vol. 32, no. 10, str. 1905-1916.</p> <p>- <b>KOŽUH, Mitja</b>, PETELIN, Stojan, PERKOVIČ, Marko. Can classification societies with their rules on redundancy propulsion improve statistics on oil spills and cleaning costs?. <i>Mar. eng. (Tokyo)</i>, 2007, vol. 42, no. 3, str. 113-118, graf. prikazi.</p>
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