

## UČNI NAČRT PREDMETA / COURSE SYLLABUS

**Predmet:** ANALIZA VEDENJA IN VARNOST  
**Course Title:** BEHAVIOUR ANALYSIS AND SAFETY

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

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

**Univerzitetna koda predmeta / University Course Code:** TV2B6

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:** doc. dr. Marija Molan / Dr. Marija Molan, Assistant 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:**

**Snov predmeta "Analiza vedenja in varnost" vsebuje temeljne informacije in znanja o analizah človekovega vedenja in vplivih vedenja na varnost sistema. Vključene so naslednje teme:**

- analiza obratovalnih dogodkov in nezgod iz vidika človekovega vedenja in vpliva na varnost
- predstavitev metod za analizo človekovega vedenja
- predstavitev rezultatov analiz nezgod in vloge človeka
- metode za usposobitev za učinkovito vedenje
- pomen človekovega vedenja v splošnih principih delovanja nadzornih sistemov

**Content (Syllabus outline):**

**Course "Behaviour Analysis And Safety" contains basic information and knowledge about analysis of worker behaviour and consequences reflected as impacts on safety in the working system. Following topics are included:**

- Root cause analysis of incidents from human behavior aspect and its impact on safety
- Methods for the analysis of human behaviour
- Presentation of results of accident analysis and the role of human
- Methods for the restoration of effective behaviour
- Disruption in a person's functioning

- ali so napake, ki jih povzroči človek, posledice napačnega človekovega vedenja ali posledice napačnega delovanja sistema
- uporaba spoznanj analiz neobičajnih dogodkov
- razvijanje ukrepov za napovedovanje, identifikacijo in obvladovanje vzrokov nezgod
- postopki in komunikacije v sistemu z lastniki, javnostjo in nadzornimi organi
- metode za kvantifikacijo človeških napak
- povezava analiz neobičajnih dogodkov z RH-modelom
- človeška percepcija tveganj in oblikovanje varnostne kulture
- motivacije, usposabljanje in spremljanje učinkovitosti kot elementi varnostne kulture
- oblikovanje kompetence za varnost

#### **Vsebina seminarske naloge:**

Na osnovi znanj iz predavanj in znanj ter izkušenj iz dodiplomskega študija in na osnovi znanj predmeta "Analiza vedenja in varnost" izdela študent analizo vzrokov nezgode v realnem delovnem okolju, izloči temeljne vedenjske oblike, določi predloge spreminjanja vedenjskih vzorcev vpletenih in določi konkretne ukrepe za preprečitev istovrstnega ali podobnega dogodka. Seminarsko nalogo študent predstavi pred avditorijem študentov.

- The importance of human behaviour in the general principles of operation of control systems
- Human errors the consequences of not adequate behaviour or the consequences of system malfunctions
- Use of knowledge of analysis of unusual events
- Developing measures to anticipate, identify and manage the root causes of accidents in terms of human
- Procedures and communication system owners, the public and supervisory authorities
- Methods to quantify the causes of human error
- Link analysis of unusual events with the ah-model
- Human perception of risks and the creation of a safety culture
- Motivation , training, and monitoring the effectiveness of the elements of safety culture
- Competencies development for safety

#### **The seminar:**

Based on the knowledge from lectures and knowledge and experiences of undergraduate study and based on knowledge of the course "Behaviour Analysis And Safety" students should analyse the causes of accidents in the real working environment, eliminate the fundamental forms of behaviour determined by suggestions of changing behavioural patterns involved and determine concrete measures to prevent identical or similar event.

A paper should be presented in front of the audience of students. Written report should also be submitted - 15 pages.

#### **Temeljna literatura in viri / Readings:**

- [1] Molan M., Človekovo vedenje v Priročnik za varno in zdravo delo, Koselj V. (ur), Tehniška založba Slovenije, (2002), 504 str. (15%)
- [2] Reason J. : Human Error, Cambridge University Press, (1990). 316 str. (100%)

- [3] Aamodt M. G., Applied Industrial/Organizational Psychology, Brooks/Cole Publishing Company, (1996), 566 str. (30%)
- [4] Molan M., Metodološka navodila za analizo varnostne kulture. Ljubljana: Klinični center Ljubljana, (2007), 87 str. (100%)

#### **Dodatna literatura**

- [5] Luthans F., Organizational Behavior, McGraw Hill, (1992), 656 str. (10%)
- [6] Reason J.: Managing The Risks of Organizational Accidents, Ashgate (1997), 252 str. (100%)
- [7] Hollnagel E.: Cognitive Reliability and Error Analysis Method CREAM, Elsevier (1998), 302 str. (100%)
- [8] Rasmussen J.: Cognitive Systems Engineering, Willey & Sons, (1994), 396 str. (20%)

#### **Cilji in kompetence:**

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#### **Objectives and Competences:**

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#### **Predvideni študijski rezultati:**

##### Znanje in razumevanje

Študentje naj bi pridobil osnovna teoretska in praktična znanja, ki so potrebna za analizo dogajanj v sistemu iz vidika človeka. Pridobijo tudi znanja za oblikovanje ustrezne varnostne kulture v sistemu ter zagotavljanje varnega delovanja in varovanja okolice.

##### Uporaba

Študentje bodo znali identificirati temeljne vedenjske vzorce človeka, ki povzročajo motnje v delovanju sistema ter povzročajo neobičajne dogodke. Usposobili se bodo za izdelavo analiz in implementacijo konkretnih ukrepov za varno in stabilno delovanje kateregakoli sistema. Na osnovi temeljnih metodoloških znanj bodo znali izdelati aplikativne modele za modeliranje konkretnih delovnih okolij. Naučili se bodo povezovati človekovo razpoložljivost z varnim in učinkovitim vedenjem. Teoretično in praktično bodo usposobljeni za implementacijo ukrepov, ki zagotavljajo varnost.

##### Refleksija

Študent bo obdelal nekaj učnih primerov dogodkov. V skupini bo moral vsak študent predstaviti svoj dogodek, predstaviti predlog identificiranega vzroka in ga zagovarjati pred kritično presojo ostal skupine. Pri tem bo moral uporabljati pridobljena teoretična znanja ter jih ovrednotil z reševanjem

#### **Intended Learning Outcomes:**

##### Knowledge and Comprehension

Students should acquire basic theoretical knowledge and practical skills that are needed for the analysis of events in the system from the point of view of the man. They should acquire the knowledge to design appropriate safety culture within the system and ensure the safe operation and protection of the environment.

##### Application

Students will be able to identify basic human behavioural patterns that cause the system malfunctions and cause abnormal events. Students will develop a safety analysis and implementation of concrete measures for the safe and stable operation of any system. Based on the fundamental methodological skills will be able to create application models for modelling specific working environments. They will learn to associate human availability of safe and effective behaviour. Theoretically and practically will be able to implement measures to ensure safety.

##### Analysis

Students will study several cases of learning events. Each student in a group will have to present a particular event to present the proposal identified the cause and to defend it against critical assessment in front of other groups. In this context, the presenter should apply acquired knowledge and evaluate it by

praktičnih problemov. Elemente varnostne kulture v vzorčnih primerih delovnih okoljih zna študent kritično oceniti in predlagati eventualne izboljšave.	solving practical problems.
<u>Prenosljive spretnosti</u> Pri predmetu bodo študentje pridobili osnova o znanja o analizi človekovega vedenja in oblikovanju ustrezne ravni varnosti v sistemu.	<u>Skill-transference Ability</u> Students will get basic knowledge about the analysis of human behaviour and the creation of an adequate level of security in the system.

**Metode poučevanja in učenja:**

<ul style="list-style-type: none"> <li>• Predavanja</li> <li>• Seminar</li> </ul>
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**Learning and Teaching Methods:**

<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Seminars</li> </ul>
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	Delež (v %) / Weight (in %)	<b>Assessment:</b>
<b>Načini ocenjevanja:</b> Izpit pisni. Ocena seminarske naloge. Ocene: 6-10 pozitivno.	<b>Seminarska naloga je 50% ocene.</b>	Writing exam. Seminar work estimation. Passing rate: 6-10

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

<p>- <b>MOLAN, Marija.</b> Prevention of stress influences and workers fitness for duty. <i>Organ. kadri</i>, 1994, let. 27, št. Suppl 9, str. 1058-1078.]</p> <p>- <b>MOLAN, Marija.</b> Osebnostne značilnosti psihosomatika, ki ima astmo = Personality characteristics of a psychosomatic person suffering from asthma. <i>Delo + varnost</i>, 1995, let. 40, št. 2, str. 64-69.</p> <p>- <b>MOLAN, Marija, MOLAN, Gregor.</b> Psihološke metode za merjenje obremenjenosti = [Psychological methods for the measuring of aggravating circumstances]. <i>Delo + varnost</i>, 1997, let. 42, št. 5, str. 252-255.]</p>
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