

Study program: Mechanical Engineering / Industrial engineering and engineering management			
Type and level of studies: Master academic studies			
Course unit: Occupational safety and health at work			
Teacher(s) in charge: Djapan Marko, Ivan Macuzic, Todorovic Petar			
Language of instructions: English			
No. of ECTS: 6			
Prerequisite: Listen out the course: N/A			
Semester: <i>Summer semester</i>			
Course unit objectives			
The aim of this course is to introduce students to the principles that enable the improvement of approach and management of occupational safety and health at work (OSH) system in the industry and business environment. Students will be introduced to the groups of hazards and hazards that can be identified in the workplace, with the proper use of methods and tools for risk assessment. Starting from the multidisciplinary of the OSH field, various aspects and factors of the OSH system are covered, from technical-technological, through organizational to human. The student will be introduced to the basic approach to the concept of Safety 4.0.			
Course unit outcomes			
The student acquires the necessary theoretical and practical knowledge that enables him to independently conduct risk assessment and analysis, respecting the basic rules of hazard identification, risk assessment and prescribing measures. The student will master a proactive approach to improve OSH field and which postulates are most important for sustainability in the field of OSH. Also, the student will be able to quickly accept new knowledge and thus contribute to the maximum advancement in the OSH area during his/her career.			
Course unit content			
<i>Theoretical part:</i> (1) Basic principles, legal and standardization frameworks of the OSH system; (2) Techniques and methods for identifying hazards in the workplace; (3) Safety analysis through case studies; (4) Advanced methods for risk assessment; (5) Advanced analysis of ergonomic aspects in the workplace; (6) Workplace health, stress, biomedical safety aspects; (7) The human factor in the safety system; (8) Basic principles of organization and management of the OSH system; (9) Lean philosophy and OSH; (10) Education in the OSH system; (11) Safety 4.0; (12) Information technologies in the service of OSH (Internet of Things, cloud computing, augmented reality); (13) Advanced machine safety systems.			
<i>Practical part:</i> Contemporary safety systems, workplace hazard identification and risk assessment.			
Literature			
Arso Vukicevic, Ivan Macuzic, Marko Djapan, Miladin Stefanovic, SafE-Tag Mobile: A novel JavaScript framework for real-time management of unsafe conditions and unsafe acts in SMEs, Safety Science, Vol.120, No.-, pp. 507-516, ISSN 0925-7535, Doi 10.1016/j.ssci.2019.07.024, 2019			
R. Hafey, 2009., Lean Safety: Transforming Your Safety Culture with Lean Management, CRC Press Taylor & Francis Group, ISBN 978-1-4398-1643-1			
S. Väyrynen, K. Häkkinen, T. Niskanen, 2015., Integrated Occupational Safety and Health Management Solutions and Industrial Cases, Springer, ISBN 978-3-319-13180-1			
G. Salvendy, 2012., Handbook of human factors and ergonomics, 4 th edition, John Wiley and Sons Inc., ISBN 978-0-470-52838-9			
Number of an active teaching hours			Other classes:
Lectures: 2	Exercises: 1.6	Other forms of classes: 0.4	Independent work: 1
Teaching methods			
Teaching is carried out through lectures and laboratory exercises. Practical examples from domestic and global industrial, technical and business practices are processed within each teaching lectures.			
Examination methods (maximum 100 points)			
Exam prerequisites:	No. of points:	Final exam:	No. of points:
Student's activity during lecture	5	oral/written examination	30
Practical classes	10		
test(s)	35		
Individual work	20		
Grading system			
Grade	No. of points	Description	
10	91-100	Excellent	
9	81-90	Exceptionally good	
8	71-80	Very good	
7	61-70	Good	
6	51-60	Passing	
5	<51	Failing	