

Title	FUNDAMENTALS OF MSW LANDFILL TECHNOLOGY						
Code	ZSIZ15						
Study Program	SVEUČILIŠNI POSLIJEDIPLOMSKI INTERDISCIPLINARNI SPECIJALISTIČKI STUDIJ "Zaštita prirode i okoliša"						
Semester	1 st or 2 nd semester						
ECTS	5						
Status	<input type="checkbox"/> obligatory <input checked="" type="checkbox"/> elective						
Lecturer	Prof. Mensur Mulabdic, PhD, Civ. Eng.						
Co-Lecturers	-						
Requirements for Enrolment	-						
Objectives	To learn about MSW (Municipal Solid Waste) landfill as a complex structure - building, its goal and mission in protecting environment, design solutions, functional and mechanical stability, diferent materials - soil and geosynthetics, technology of construction, monitoring of landfill and its surrounding area						
Learning Outcomes	Fulfilling all the requirements student will be able to: 1- define and understand fundamental structure and functional parts of the MSW 2- understand role of diferent parts of MSW 3- define required material properties for deferent parts of the structure 4- reccognise connections and impact of diferent parts on each other 5- gain critical attitude regarding con struction technology 6- define control measures regarding quality 7- characterize monitoring program for landfill and surrounding area						
Connection between Learning Outcomes, Curricular and Student Activities	Student Activities	ECTS	Learning Outcomes	Curricular Activities	Methods of Assessment	Credits *	
						min	max
	Presence at lectures, Active contribution	0,5	1-7	lectures	list	5	10
	Student seminar work	2,5	1-7	seminar	Grading seminar work	35	60
	Oral exam	2	1-7	Final exam	Oral exam	20	30
	Total	5				60	100
	Final grade: 60-70 % credits : 2 71-80 % : 3 81-90 % : 4 91-100 % : 5						
Consultations							
Learning Activities	Lectures		Seminars		Practice		
Hours	10		10				
Contents / Teaching Units	- general description of MSW - functional parts - bottom and cover liners, - drainage system . extraction of gas - construction requirements - materials, soil and geosynthetics - quality control program and measures - monitoring						
Obligatory Literature	1. Znidarčić,D., Kovačić, D., Kvansička,P.,Mulabdić, M. (1996). Geotehnologija pri odlaganju komunalnog otpada. Građevni godišnjak '96, Hrvatsko društvo građevinskih inženjera, str 161-234. /in Croatian, all the documents/ 2. M.Mulabdić: Predavanja za predmet , pisani tekst, 3. M.Mulabdić: Predavanja sa struč og seminara DIT-Odlagališta otpada, 2004-2005						

	<p>4. Milanović, Z. (1992). Deponij - trajno odlaganje otpada, ZGO Zagreb, svibanj 1992, str. 199</p> <p>5. Europska direktiva o optadu, 1999/31/EC; 2003/33/EC</p> <p>6. Pravilnik o načinima i uvjetima odlaganja otpada, kategorijama i uvjetima rada za odlagališta otpada, NN 11415</p>
Recommended literature	<p>1. Bagchi, A. (1990.): Design, Construction and Monitoring of Sanitary Landfills, John Wiley&Sons, pp 284</p> <p>2. Environmental Geotechnics (1997), Report of the ISSMFE Technical Committee TC5 on Environmental Geotechnics, Bochum, Ruhr - Universität Bochum,</p> <p>3. Geotechnics of Landfill Design and Remediation Worsk, Technical Recommendations -GLR (1993), Prepared by ETC8 for ISSMFE , edited by Germain Geotechnical Society for the ISSMFE, 2dn edition, Ernst&Sohn Verlag, Berlin</p>
Requirements for Aquiring Signature	Presence at lectures
Type of Exam	Oral
Lectures Language	Croatian, english
Quality Monitoring	Student inquiry, suggestions from students and comments on the course during oral exam