



University of
Zagreb



University of Zagreb
FACULTY OF MINING,
GEOLOGY AND PETROLEUM
ENGINEERING



1. GENERAL INFORMATION			
1.1. Course teacher	Assistant Professor Borivoje Pašić, PhD		1.6. Year of the study
1.2. Name of the course	Design and Drilling of Directional Well		1.7. ECTS credits
1.3. Associate teachers	Teaching Assistant Igor Medved, MSc		1.8. Type of instruction (number of hours L + E + S + e-learning)
1.4. Study programme (undergraduate, graduate, integrated)	graduate		1.9. Expected enrolment in the course
1.5. Status of the course	<input type="checkbox"/> mandatory	<input checked="" type="checkbox"/> elective	1.10. Level of application of e-learning (level 1, 2, 3), percentage of online instruction (max. 20%)
II.			
4			
25L+15E+10S+10e-učenja			
15			
level 3, do 16,67% online			
2. COUSE DESCRIPTION			
2.1. Course objectives	Acquisition of knowledge and skills necessary for directional and horizontal well design in accordance with specific project requirements, and selection of methods and procedures for drilling the projected well in accordance with the project.		
2.2. Enrolment requirements and/or entry competences required for the course	Passed exams from <i>Drilling engineering</i> and <i>Oil and gas production engineering</i> from first year of graduate study.		
2.3. Learning outcomes at the level of the programme to which the course contributes	Independently solve complex engineering problems in petroleum engineering and geoenery engineering; Design wellbores for hydrocarbon and geothermal water exploitation; Compare specific procedures and processes in petroleum engineering and geoenery engineering; Appraise the process and a facility's efficiency in petroleum engineering and geoenery engineering; Supervise projects in petroleum engineering and geoenery engineering.		
2.4. Expected learning outcomes at the level of the course (3 to 10 learning outcomes)	Distinguish specific tools for directional drilling operations; Propose the drillstring for drilling of different types of directional wells; Design the directional well trajectory; Compare different directional well design with regard to technical limitations of drilling equipment; Recommended surface and downhole equipment for directional drilling with respect to well design and specific requirements; Compare the different telemetry systems used in directional drilling; Plan completion design for the directional well.		
2.5. Course content (syllabus)	Application of the directional drilling technology in practice; Design of the directional and horizontal well trajectory; Directional and horizontal drilling tools; Steerable downhole motors; Rotary steerable systems; Telemetry in the drilling operation; Design of the directional and horizontal wells; Extended reach drilling; Multilateral wells; Completion design for directional wells; Case studies.		
2.6. Format of instruction:	<input checked="" type="checkbox"/> lectures	<input checked="" type="checkbox"/> independent assignments	2.7. Comments:

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	<input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> online in entirety <input checked="" type="checkbox"/> partial e-learning <input type="checkbox"/> field work	<input type="checkbox"/> multimedia and the internet <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)	-			
2.8. Student responsibilities	Active participation in lecture, exercises and seminars, preparation and presentation of the project in accordance with the given project task, homework, taking the written and oral exams.					
2.9. Monitoring student work	Class attendance	YES	Research	NO	Oral exam	YES
	Experimental work		Report	NO	Homework	YES
	Essay		Seminar paper	NO		
	Preliminary exam		Practical work	NO		
	Project	YES	Written exam	YES	ECTS credits (total)	4
2.10. Required literature (available in the library and/or via other media)	Title				Number of copies in the library	Availability via other media
	Carden, R.S., Grace, R.D. (2007.): <i>Horizontal and Directional Drilling</i> , PetroSkills, LLC An OGCI Company, Tulsa, Oklahoma.				NO	YES
	Samuel, R. (2013.): <i>Horizontal Drilling Engineering: Theory, Methods and Applications</i> , Sigma Quadrant Publisher.				NO	YES
2.11. Optional literature	Handbooks and technical documentation from Schlumberger and Halliburton company					
	OnePetro – online base of review, professional and scientific papers					
2.12. Other (as the proposer wishes to add)	-					

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