



University of
Zagreb



University of Zagreb
FACULTY OF MINING,
GEOLOGY AND PETROLEUM
ENGINEERING



1. GENERAL INFORMATION				
1.1. Course teacher	Full Professor Daria Karasalihović Sedlar, PhD		1.6. Year of the study	II.
1.2. Name of the course	Energy transition		1.7. ECTS credits	4
1.3. Associate teachers	Teaching Assistant Marija Macenić, PhD; Teaching Assistant Ivan Smajla, MSc		1.8. Type of instruction (number of hours L + E + S + e-learning)	28L+0E+28S+4e-learning
1.4. Study programme (undergraduate, graduate, integrated)	graduate		1.9. Expected enrolment in the course	10
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%)	level 3, 6,67% online
2. COUSE DESCRIPTION				
2.1. Course objectives	Understanding the lectures, exercises, and knowledge from mandatory literature according to subject units, application of the acquired knowledge to problem solving in the area of rational energy consumption regarding economic, ecological and sustainable development and development of each case study regarding the energy transition in the country, EU, and world.			
2.2. Enrolment requirements and/or entry competences required for the course	-			
2.3. Learning outcomes at the level of the programme to which the course contributes	Appraise process and facility's efficiency in petroleum engineering and geoenery engineering; Analyse energy markets.			
2.4. Expected learning outcomes at the level of the course (3 to 10 learning outcomes)	Establish the structures, relations, and movements on energy markets; Compare the different influences on energy markets (economic, ecological, sustainable development); Explain relevant energy strategies in energy transition; Explain the role of alternative fuels in energy transition; Explain the role of hydrogen and P2G2P technologies in energy transition; Explain the role of geothermal energy in energy transition; Compare the changes in movements in global energy consumption and energy consumption on the national market considering technological changes and trends; Explain the energy balance, fundamentals of energy policy for reaching low carbon economy; Evaluate the role of hydrocarbons in the low carbon economy; Create an energy policy on a national economy level and fundamentals for energy strategy management in low carbon economy transition.			

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2.5. Course content (syllabus)	Structural and technological changes in energy markets; Analysis of energy movements depending on economic and ecological factors and sustainable development; World and regional energy sources markets, competition, monopoly and market mechanisms and globalisation on energy markets; Energy infrastructural project; Energy options and future markets; Classification of energy form, energy units, primary and transformed energy form, useful energy forms; Physical and economic terms of energy, thermodynamic and economic definitions of energy; Balancing the primary energy sources, renewable energy sources – increase in their share; Depletion of fossil energy sources; Using geothermal energy in energy transition; Analysis of development and usage of alternative fuels; Hydrogen and P2G2P technologies; Prediction of global energy movements, examples of analyses of future energy consumption according to different sources; Energy analyses and economy policy for reaching low carbon economy growth; Analysis of energy strategy (EU, Croatia) considering the climate changes; Examples of incentives for renewable energy sources; Influence of energy markets on environment, emission trading system.									
2.6. Format of instruction:	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> online in entirety <input checked="" type="checkbox"/> partial e-learning <input type="checkbox"/> field work				<input type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia and the internet <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			2.7. Comments:		
								-		
2.8. Student responsibilities	Class attendance, independent assignments, seminar paper, written and oral exam									
2.9. Monitoring student work	Class attendance	YES		Research	YES		Oral exam	YES		
	Experimental work		NO	Report		NO				
	Essay		NO	Seminar paper	YES					
	Preliminary exam		NO	Practical work		NO				
	Project		NO	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	
	Dahl, C. (2008.): <i>International Energy Markets</i> , PennWell Corp, 587 pages.						YES		NO	
	<i>Green Paper</i> - Towards a European strategy for the security of energy supply						NO		YES	
	European Commission: A European Green Deal.						NO		YES	
2.11. Optional literature	Internet sources: https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en , https://windeurope.org/ , https://ec.europa.eu/energy/topics/renewable-energy_en									
2.12. Other (as the proposer wishes to add)	-									

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