



University of
Zagreb



University of Zagreb
FACULTY OF MINING,
GEOLOGY AND PETROLEUM
ENGINEERING



1. GENERAL INFORMATION				
1.1. Course teacher	Associate Professor Vladislav Brkić, PhD; Assistant Professor Karolina Novak Mavar, PhD		1.6. Year of the study	II
1.2. Name of the course	Biofuels production		1.7. ECTS credits	4
1.3. Associate teachers			1.8. Type of instruction (number of hours L + E + S + e-learning)	25L+0E+0S+5e-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 2, 8,3% online
2. COUSE DESCRIPTION				
2.1. Course objectives	Provide students with knowledge and expertise in biofuels technology and the most significant sustainability issues, covering a range of relevant environmental, economic and social aspects.			
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	Independently solve complex engineering problems in petroleum engineering and geoenery engineering; Assess the environmental impact of petroleum engineering and geoenery engineering; Appraise projects in petroleum engineering and geoenery engineering.			
2.4. Expected learning outcomes at the level of the course (3 to 10 learning outcomes)	Annalise the main drivers for biofuels production; Examine and assess the sustainability of biofuels production by taking into account methods, standards and regulations; Distinguish biofuels generations and production methods; Generate recommendations for biofuels production and usage policy development.			
2.5. Course content (syllabus)	What are biofuels? Sustainability criteria for biofuels; Biomass as a biofuel production basis; Development of biofuel use; Biofuels of the first (biodiesel, biethanol, biogas), second (bioethanol from lignocellulosic mass, BIO - DME (biodimethylether), second-generation biodiesel, BIO - MTBE (methyl tert-butyl ether)), and third generation (biofuels from algae, biohydrogen); Steps in the process of biodiesel and biogas production; Transportation and storage of biodiesel and biogas; Legislative framework - EU Regulation: EU Directive 2018/2001 on the promotion of the use of energy from renewable sources and related national regulations; Biofuels quality standard; Biofuel certification system.			
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 type="checkbox"/> exercises <input type="checkbox"/> online in entirety <input 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	Class attendance (80%), seminar paper prepared and presented.					
2.9. Monitoring student work	Class attendance	YES	Research	NO	Oral exam	NO
	Experimental work		Report	NO	Seminar presentation	YES
	Essay		Seminar paper	YES		
	Preliminary exam		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
	Kovač, R. (2020.): <i>Biodiesel</i> , SPE Croatia.				YES	NO
	Eksioglu, S.D., Rebennack, S., Pardalos, P.M. (2015.): <i>Handbook of Bioenergy Bioenergy Supply Chain – Models and Applications</i> , Springer.				YES	YES
2.11. Optional literature	Georg M., Guebitz; G.M., Bauer, A., Bochmann, G., Gronauer, A., Weiss, S. (2015.): <i>Biogas Science and Technology</i> , Springer.					
2.12. Other (as the proposer wishes to add)	SPE Webinars; OnePetro articles, Biofuels International Magazine (https://biofuels-news.com),					

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