



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 geoenergy engineering; Assess the environmental impact of petroleum engineering and geoenergy engineering; Appraise projects in petroleum engineering and geoenergy engineering.		
2.4. Expected learning outcomes at the level of the course (3 to 10 learning outcomes)	Analise 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:



	<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		NO	Report		NO	Seminar presentation	YES			
	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			
	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 ( <a href="https://biofuels-news.com">https://biofuels-news.com</a> ),										