



Course ID: HTH404	Course name: BIOFUELS		
Cycle: FIRST	Year: FOURTH	Semester: VII	ECTS credits: 3
Course status: ELECTIVE		Total course hours: 45 Lectures: 30 Laboratory: 15	
Teaching participants:	Teachers and associates with expertise in the field to which the subject belongs		
Prerequisite for enrollment:	Introduction in biotechnology		
Course aims:	Introduction to the principles and techniques of obtaining of biofuels from renewable energy sources		
Thematic course units:	Use of fossil fuels and environmental implications The current energy challenges and the importance biofuels in achieving energy security and minimizing greenhouse gases emissions Renewable energy sources Biomass - the basis of biofuel production First generation of biofuels Second generation of biofuels Third generation of biofuels Principles and techniques for production of biofuels Biogas production Impact of biofuels on the environment Application of biofuels and bioenergy produced from biomass Bio-refinery concept Economic aspect and "life cycle" of biofuels		
Learning outcomes:	Knowledge: Students will have: an understanding of renewable energy and their impact on societal and global context; ability to design experiments and conduct lab works pertinent to biofuel research; awareness of emerging technologies and their impact on environmental issues; ability to identify and formulate an engineering problem, collect relevant data, critically analyze and interpret data to develop a solution; ability to understand professional and ethical responsibility; ability to work with multidisciplinary teams, present ideas and technical material to diverse audiences. Skills: Students should be able to implement knowledge about producing biofuels from vegetable oils, yellow grease, used cooking oils, animal fats, algae Competences: The course gives permission for independent lab production of all three generation of biofuels, monitoring of parameters		

	through production and qualitative analysis of the final products. The students will be able to prepare and present technical and scientific information, both orally and in writing, with the help of laboratory assignments.																					
Teaching methodology:	Auditory lectures, Laboratory exercises																					
Assessment methods and grading system¹:	Grading criteria																					
	<table border="1"> <thead> <tr> <th>Criteria</th> <th>Maximal score</th> <th>Required score</th> </tr> </thead> <tbody> <tr> <td>1. Class attendance</td> <td>5</td> <td>3</td> </tr> <tr> <td>2. Class activities</td> <td>10</td> <td>5</td> </tr> <tr> <td>3. Midterms</td> <td>45</td> <td>25</td> </tr> <tr> <td>4. Final exam</td> <td>40</td> <td>22</td> </tr> <tr> <td>Total</td> <td>100</td> <td>100</td> </tr> </tbody> </table>	Criteria	Maximal score	Required score	1. Class attendance	5	3	2. Class activities	10	5	3. Midterms	45	25	4. Final exam	40	22	Total	100	100			
	Criteria	Maximal score	Required score																			
	1. Class attendance	5	3																			
	2. Class activities	10	5																			
	3. Midterms	45	25																			
	4. Final exam	40	22																			
	Total	100	100																			
	Scores and grading																					
	<table border="1"> <thead> <tr> <th>Score</th> <th>Grade (B&H)</th> <th>Grade (ECTS)</th> </tr> </thead> <tbody> <tr> <td>< 55</td> <td>5</td> <td>F, FX</td> </tr> <tr> <td>55–64</td> <td>6</td> <td>E</td> </tr> <tr> <td>65–74</td> <td>7</td> <td>D</td> </tr> <tr> <td>75–84</td> <td>8</td> <td>C</td> </tr> <tr> <td>85–94</td> <td>9</td> <td>B</td> </tr> <tr> <td>95–100</td> <td>10</td> <td>A</td> </tr> </tbody> </table>	Score	Grade (B&H)	Grade (ECTS)	< 55	5	F, FX	55–64	6	E	65–74	7	D	75–84	8	C	85–94	9	B	95–100	10	A
	Score	Grade (B&H)	Grade (ECTS)																			
< 55	5	F, FX																				
55–64	6	E																				
65–74	7	D																				
75–84	8	C																				
85–94	9	B																				
95–100	10	A																				
Literature²:	<p>Supplementary literature:</p> <ol style="list-style-type: none"> 1. Miloš Rdaković, (2009), Biodizel, biogas, biomasa, Beograd 2. Miloš Rdaković,(2010), Obnovljivi izvori energije i njihova ocena, Beograd 3. Dinko Sinčić, (2008), Biodizel: Svojstva i tehnologija proizvodnje , Zagreb 4. Ashok Pandey, Christian Larroche, Steven C. Ricke, Claude-Gilles Dussap and Edgard Gnansounou (2011), Biofuels, Alternative Feedstocks and Conversion Processes,(1st Edition), Elsevier 																					

¹ The grading structure for each subject is determined by the Council of the organizational unit before the beginning of the academic year in which the subject is taught as per Article 64, paragraph 6 of the Law on Higher Education of Sarajevo Canton

² The Senate of the higher education institution, as an institution, or the Council of the organizational unit of the higher education institution, as a public institution, determines by a special decision, which is published on its website before the beginning of the academic year obligatory, mandatory and recommended textbooks and manuals, as well as other recommended literature based on which exams are prepared and taken as per Article 56, paragraph 3 of the Law on Higher Education of the Sarajevo Canton