

Study program: Engineering Ecology				
Course: Alternative Fuels from Biomass				
Professor/assistant: Milka B. Ivković				
Type of course: Elective				
ECTS credits: 7				
Prerequisites: none				
Aims of the course: Students acquire knowledge about quality and application of fuels gained by new technologies for energy production from renewable biomass sources (bioethanol, biodiesel, methanol, hydrogen, methane, sawdust briquette, wood briquette, charcoal).				
Learning outcomes: Students will be able to establish criteria for choosing specific primary resource (biomass source) and technologies for alternative fuel production based on techno-economic analysis, as well as criteria for adequate alternative fuel implementation in concrete conditions.				
Syllabus: <i>Theoretical part:</i> <ol style="list-style-type: none"> 1. Potential biomass sources for gaining energy. 2. Liquid fuels for IC engines 3. Bioethanol; 4. Biodiesel; 5. Methanol; 6. Fuel gas for IC engines and thermo-energetics; 7. Hydrogen; 8. Methane formed on the basis of anaerobic digestion of waste 9. Solid fuels for thermo-energetics: Sawdust briquette; Wood briquette; charcoal. <i>Practical part:</i> Auditory exercises, solving practical examples by calculating, term papers, etc.				
Literature: <ol style="list-style-type: none"> 1. Despotovć M., Babić M., Energija biomase, Mašinski fakultet, Kragujevac, 2007. 2. Todorović, M., Todorović T., Biodizel - humano gorivo, SANU, 2007. 3. Ćurčić S. Dragičević S. Milunović S. Đurić M., Mogućnost korišćenja biomase i otpadnog drveta od komunalnih sistema za dobijanje različitih oblika energije, Tehnički fakultet Čačak, 2010. 4. Furman T. i saradnici, Biodizel alternativno i ekološko tečno gorivo, Monografija, Poljoprivredni fakultet, Novi Sad, 2005. 5. Ninić N, Oka. S,: Sagorevanje biomase u energetske svrhe. Beograd, 1992. 6. Glavonjić B. Vodič za drvenu biomasu: vrste, karakteristike i pogodnosti za grejanje. Šumarski fakultet Beograd, 2008. 7. Studija opravdanosti korišćenja drvnog otpada u Srbiji USAID 2008. 				
Total number of active classes: 6		Lectures: 3	Practical classes: 3	
Teaching methods: Theoretical part: lectures, interactive approach; Practical part: interactive approach, methods for choosing the resources, technological processes and adequate usage of alternative fuels, term papers				
Grading system (maximum 100 points) grading scale from 5 to 10: below 51 points grade 5, grade 6 from 51- 60 points, grade 7 from 61-70 points, grade 8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91- 100 points.				
Pre-exam obligations:		Points:	Final exam:	Points:
Activity during lectures		5	Oral exam	50
Practical training		5		
Written test		20		
Term paper		10		
Minimum requirement for the final exam is 30 points				