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| Course: | Other renewable energy sources  |
| Course id:3ОАГ7О28 |
| Number of ECTS:3 |
| Teacher: | Dr.Mirko Babić, assistant: Milivoj Radojčin, MSc |
| Course status | Mandatory |
| Number of active teaching classes (weekly) |
| Lectures: 2 | Practical classes: 2 | Other teaching types: | Study research work: | Other classes: |
| Precondition courses | None/navesti ako ima |
| 1. Educational goal

To introduce students with the types and specifics of renewable energy sources. Students acquire basic knowledge about the possibilities and principles of the conversion of these types of energy. |
| 1. Educational outcomes

The training students for evaluating the possibility of using renewable energy sources in different cases. The student is trained to perform an adequate selection and conversion of energy. |
| 1. Course content

*Theory lessons*Basic concepts of energy. Energy and the environment. Energy sustainability. Global trends in the use of renewable energy sources (RES). Politics of RES in the European Union. Specifics of certain renewable sources. Biomass. Solar energy. Wind energy. Hydropower. Energy conversion. The combustion of biomass. Pyrolysis and gasification of biomass. Production of liquid fuels from biomass - biodiesel and bioethanol. Fuel cells. Heating systems. Solar energy receivers. The conversion of solar energy into thermal, electrical and mechanical energy. Conversion wind energy into mechanical and electrical energy. Hydro. Geothermal energy. The heat pump.*Practical teaching: Exercise, Other modes of teaching, Study research work*The arithmetic exercises in the field of conversion and energy balance. Essay. The theme of the essay is energy sustainability for the selected biotechnical system. Demonstration laboratory exercise of the conversion of biomass energy and solar energy. Visits to existing systems for the conversion of renewable energy sources. |
| 1. Teaching methods

The teaching is an oral with the help of Power Point presentations and practical training consists of the computation, working of seminar papers and visits to facility. |
| Knowledge evaluation (maximum 100 points) |
| Pre-examination obligations | Mandatory | Points | Final exam | Mandatory | Points |
| Lecture attendance | Yes | 5 | *Oral part of the exam* | Yes | 15 |
| Test | Yes | 55 |  |
| Exercise attendance | Yes | 5 |
|  *Test, Term paper,* | Yes | 20 |
| Literature  |
| Ord. | Author | Title | Publisher | Year |
|  | Mirko Babić | Renewable energy sources, authorized lectures | Faculty of Agriculture Novi Sad | 2011 |
|  | Osamu Kitani | CIGR: Handbook of agricultural engineering – Energy and biomass engineering | Americansociety of agricultural engineers | 1999 |
|  |  | Directives and regulations of the European Union in the domain of renewable energy. |  |  |
|  |  | The regulations of the Republic of Serbia in the domain of renewable energy sources |  |  |

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| Znak univerziteta | UNIVERSITY OF NOVI SADFACULTY OF AGRICULTURE 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 8 | Znak fakulteta2 |
| Study Programme AccreditationUNDERGRADUATE ACADEMIC STUDIES *AGROECOLOGY AND ENVIROMENTAL PROTECTION* |
| Table 5.2 Course specification |