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| **Study programs:** Agroindustrial Engineering / |
| **The type and level of study:** Doctoral |
| **Course title: Еnergy efficiency and renewable energy source** |
| **Teacher** (name, middle initial, last name): **Todor V. Janić****Associate** (name, middle initial, last name): **Todor V. Janić** |
| **Status of the course:** elective course |
| **Number:** ЕСПБ: 5 |
| **Requirement:** - |
| **Goal of course**To familiarize students with the specifics of the theoretical and practical constraint in the field of process and thermally equipment in the centers for drying and storage, systematization and application of that concrete methods for solving them. |
| **Outcome of cases**Training in the implementation and promotion of the use of HVAC and process systems for the use of renewable energy sources for energy purposes in terms of higher functionality, work efficiency and environmental protection, as well as the application of technology and techniques in the production of renewable and sustainable energy. |
| **Content of the course:***Theory lessons*The importance of energy efficiency. General conditions for achieving energy efficiency equipment, plants and facilities. Energy efficiency of thermal and processing plants. Energy efficiency of buildings. The concept of the energy certificate and its role. The choice of building materials. Cities energy inefficiency. Measurements and calculations of the energy consumption and increase energy efficiency opportunities. Measures to improve energy efficiency of equipment, plant and facilities. Legislation. Energy efficiency and environmental protection. Sources of energy. Renewable energy sources. Solid biomass. The potentials and possibilities of using agricultural decaying. Technology of production and harvesting of energy crops. Physico-chemical characteristics of those materials. Liquid biomass. Biogas technology. Methods of preparing energy storage and end-use (baling, briquetting, pelleting, preparing the substrate in biogas plants, etc.). Solar energy. Geothermal energy. Wind energy. The combustion of fuel. Thermal and process plants for the preparation and generation: furnaces, boilers, solar collectors, heat pumps, biogas plants, plants for the production of biodiesel and bioethanol, wind generators, facilities for the use of geothermal energy.*Practical teaching: Exercise, Other modes of teaching, Study research work*The content of practical work accompanies the lectures and applicable to solving the tasks of teaching areas. Laboratory exercises. |
| **Literature:**1. Brkić, M, Janić, T, Somer, D: Termotehnika u poljoprivredi – II deo, Procesna tehnika i energetika, Poljoprivredni fakultet, Novi Sad, 2006., p. 330,2. Proceedings and magazines. |
| **Number of active classes**  | Other classes:2 |
| Lectures:3 | Exercises:3 | Other forms of teaching: | Research: |
| **Teaching methods**Methods of presentations, demonstrations, simulations and illustrations. Laboratory-experimental methods |
| **Evaluation of knowledge (maximum 100 points)** |
| **Pre-exam obligations**  | **Points** | **Final exam** | **Points** |
| Attendance of classes | - | Written exam | - |
| Activity during lectures | - | Oral exam | tо 51 |
| Colloquium checks | - |  |  |
| Seminar | 49 |  |  |
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