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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | Faculty of Occupational Safety in Niš |
| **GENERAL INFORMATION** |
| Study program  | Environmental Engineering |
| Study Module (if applicable) | / |
| Course title | Air pollution and Sustainable Energy Systems  |
| Level of study | ☐ Bachelor ☐ Master’s ☒Doctoral |
| Type of course | ☐ Obligatory ☒Elective |
| Semester  | ☒Autumn ☐Spring |
| Year of study  | Second year |
| Number of ECTS allocated | 10 |
| Name of lecturer/lecturers | Nenad Živković, Miomir Raos |
| Teaching mode | ☒ Lectures ☐Group tutorials ☒ Individual tutorials ☐Laboratory work ☐ Project work ☒ Seminar ☐Distance learning ☐ Blended learning ☒ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| *The study of basic principles, thermodynamic conditions and limitations of the processes of obtaining, transmitting and transformation of energy, energy and environmental importance of energy efficiency. Studying the possibilities of improving energy processes, raising their energy efficiency in order to reduce the environmental impact on air and global climate as well. Competence for research and creative implementation of knowledge in scientific research of efficient energy use, increasing the quality of processes and energy saving through improving energy efficiency, with the purpose of reducing pollutant emission.* |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Energy efficiency: Energy efficiency and sustainable development. Energy efficient technologies. Problems and possibilities of using cogeneration and trigeneration. The use of waste heat. Energy management: Energy management programmes. Measurement, management and visualization of processes. Air protection and sustainable development: Environmental impact assessment studies. IPPC recommendations. The BAT (Best Available Techniques) Reference Document (BREF). Implementation of international standards. Implementation of the Kyoto Protocol. The EU Directive on renewable energy. Activities and initiative in air protection and climate change. Reducing emissions of air pollution with the aim to use sustainable energy systems: Treatment and utilization of waste materials from energy processes. Concepts and projects of cleaner production. The use of waste materials as fuel. The use of local fuels. The use of renewable energy sources. The replacement of fuel and the use of alternative fuels. The application of the product life cycle analysis. |
| **LANGUAGE OF INSTRUCTION** |
| ☐ Serbian (complete course) ☐ English (complete course) ☐ Other \_\_\_\_\_\_\_\_\_\_\_\_\_ (complete course)☒Serbian with English mentoring ☐Serbian with other mentoring \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **ASSESSMENT METHODS AND CRITERIA** |
| **Pre exam duties** | **Points** | **Final exam** | **points** |
| **Activity during lectures** |  | **Written examination** | **30** |
| **Practical teaching** |  | **Oral examination** | **30** |
| **Seminary work** | **40** |  |  |
| **Teaching colloquia** |  | **OVERALL SUM** |  |
| **\*Final examination mark is formed in accordance with the Institutional documents** |