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| **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** | Faculty of Mechanical Engineering |
| **GENERAL INFORMATION** |
| Study Program | **Engineering management** |
| Study Module (if applicable) | Energy management |
| Course Title | Energy management in buildings |
| Level of Study | ☐Bachelor | ☒ Master’s | ☐ Doctoral |
| Type of Course | ☐ Obligatory | ☒ Elective |
| Semester | ☒ Autumn | ☐ Spring |
| Year of Study | I |
| Number of ECTS Allocated | 7 |
| Name of Lecturer/Lecturers | Mladen M. Stojiljković, Bratislav D. Blagojević, Velimir P. Stefanović, Branislav V. Stojanović |
| Teaching Mode | ☒ Lectures | ☐ Group tutorials | ☐ Individual tutorials |
| ☐ Laboratory work | ☒ Project work | ☐ Seminar |
| ☐ Distance learning | ☐ Blended learning | ☐ Other |
| **Purpose and Overview (max. 5 sentences)** |
| *Introduce students to management, technical, environmental and economic aspects of building energy systems and building energy supply.**The knowledge acquired qualifies student to: identify and evaluate energy efficiency measures in buildings and implementation of renewable energy sources, perform building energy audits, implement building energy management system* |
| **Syllabus (brief outline and summary of topics, max. 10 sentences)** |
| 1) Introduction. Building energy management concept, 2) Building envelope. Thermal characteristics. Heat losses and gains through envelope, 3) Building energy supply systems. Boilers. District heating. Cogeneration. Heat pumps. Active solar heating. Passive solar heating, 4) Occupant thermal comfort. Heating and domestic hot water preparation. Heat storage 5) Occupant thermal comfort. Air conditioning, 6) Building electricity supply. Electrical devices and appliances. Lighting systems, 7) Mathematical modelling of building energy performance. Final energy consumption. Degree-day method. BIN method. Building simulations, 8) Improving building energy performance. Measuring energy related parameters. Energy performance indicators, 9) Energy efficiency measures and renewable energy sources. Evaluation of energy and environmental impact of proposed measures, 10) Financial and economical aspects. Financial and economical evaluation of proposed measures, 11) Energy audit. Preliminary energy audit. Detailed energy audit, 12) Supervision of building energy performance. Reporting, 13) Operation and maintenance of building energy systems and building envelope, 14) Legal framework, Planning and construction. Building energy certification |
| **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** | **10** | **Written Examination** | **20** |
| **Practical Teaching** | **10** | **Oral Examination** | **25** |
| **Homework** | **15** | **Overall Sum** | **100** |
| **Teaching Colloquia** | **20** |  |  |
| **\*Final examination mark is formed in accordance with the Institutional documents** |