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| **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** | Faculty of Mechanical Engineering |
| **GENERAL INFORMATION** |
| Study Program | **Mechanical Engineering**  |
| Study Module (if applicable) | - |
| Course Title | Elements of oil hydraulics and pneumatics |
| Level of Study | ☒Bachelor | ☐ Master’s | ☐ Doctoral |
| Type of Course | ☐ Obligatory | ☒ Elective |
| Semester | ☒ Autumn | ☐ Spring |
| Year of Study | IV |
| Number of ECTS Allocated | 8 |
| Name of Lecturer/Lecturers | Saša Milanović |
| Teaching Mode | ☒ Lectures | ☐ Group tutorials | ☐ Individual tutorials |
| ☐ Laboratory work | ☐ Project work | ☐ Seminar |
| ☐ Distance learning | ☐ Blended learning | ☐ Other |
| **Purpose and Overview (max. 5 sentences)** |
| *The aim of the course is to introduce all students to basic elements in the field of hydraulics and pneumatics. The course is targeting both the theoretical and practical aspects of the elements, their construction, purpose and practical use.* |
| **Syllabus (brief outline and summary of topics, max. 10 sentences)** |
| 1) Principles of operation of the hydraulic system. The advantages and disadvantages of the hydraulic system. 2) Types of hydraulic systems. Hydraulic oils and fluids. The properties of hydraulic oils. 3)The elements for the transformation of energy. 4) Displacement pumps and motors. Piston pumps and motors. Vane pumps and motors. Gear pumps and motors.Hydraulic cylinders. Hydraulic accumulators. 5) Control and regulation. Control valves, the pressure valves and flow valves. 6) Additional elements: fuel, filters, piping, wiring components, devices for cooling, heating devices. 7) Sealing in hydraulics. 8) Sealing of stationary elements. Sealing of moving surfaces. 9) Pneumatic elements. Advantages and Disadvantages of pneumatic systems compared to others. 10) Air as the working fluid. Preparation of compressed air. The preparatory group for air. 11) Pressure valves. Directional flow valves. Silencers. Pneumatic engines. |
| **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** | **0\* (45)** |
| **Practical Teaching** | **10** | **Oral Examination** | **35** |
| **Three midterm exams** | **45** | **Overall Sum** | **100** |
| **\*** **Refers to students who have already gained points by completing pre-exam requirements** |