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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) | - | | | | | | | |
| Course Title | Technical physics | | | | | | | |
| Level of Study | ☒Bachelor | | | ☐ Master’s | | | | ☐ Doctoral |
| Type of Course | ☒ Obligatory | | | ☐ Elective | | | | |
| Semester | ☐ Autumn | | | ☒ Spring | | | | |
| Year of Study | I | | | | | | | |
| Number of ECTS Allocated | 8 | | | | | | | |
| Name of Lecturer/Lecturers | Mića Vukić, Goran Janevski, Jelena Manojlović, Živojin Stamenković | | | | | | | |
| 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 with the fundamental knowledge in the fields of electricity, mechanics, fluid mechanics and thermodynamics.* | | | | | | | | |
| **Syllabus (brief outline and summary of topics, max. 10 sentences)** | | | | | | | | |
| 1) Basic concepts of electricity and electrical properties of the substance. Coulomb's law. The electric field. Electric potential. Capacitance. Electric capacitors. Electric current and current density. Ohm's law. Joule's law. I and II Kirchhoff law. Resistors. Magnetic induction. Magnetic flux. Magnetic properties of materials. Energy of the magnetic field. The current in R, LC and RLC circuits.  2) The concept of force in mechanics, torque, force-coupled and systems of forces, basic concepts of kinematics, Motion, reference system. Position vector, velocity, acceleration, tangential and normal components of acceleration, general laws of particle dynamics.  3) Physical properties of fluids. Forces in fluid. Density, viscosity, compressibility. Fluid statics. Pressure, basic hydrostatic equation. Relative equilibrium of fluids. Pressure on flat and curved surfaces. Buoyancy and stability. Friction and local loses in pipelines.  4) "Working body". Thermodynamic state variables. Equilibrium, change of state, process. The basic equation of state. The internal energy. Enthalpy. Thermal capacity. Heat. Work. The first law of thermodynamics for closed and open thermodynamic systems. The second principle of thermodynamics. Entropy. Heat diagram. | | | | | | | | |
| **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\* (90)** | | |
| **Practical Teaching** | | **-** | **Oral Examination** | | | **-** | | |
| **Four midterm exams** | | **90** | **Overall Sum** | | | **100** | | |
| **\*** **Refers to students who have already gained points by completing pre-exam requirements** | | | | | | | | |