



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	<input checked="" type="checkbox"/> Bachelor <input type="checkbox"/> Master's <input type="checkbox"/> Doctoral
Type of Course	<input checked="" type="checkbox"/> Obligatory <input type="checkbox"/> Elective
Semester	<input type="checkbox"/> Autumn <input checked="" type="checkbox"/> Spring
Year of Study	I
Number of ECTS Allocated	8
Name of Lecturer/Lecturers	Mića Vukić, Goran Janevski, Jelena Manojlović, Živojin Stamenković
Teaching Mode	<input checked="" type="checkbox"/> Lectures <input type="checkbox"/> Group tutorials <input type="checkbox"/> Individual tutorials <input type="checkbox"/> Laboratory work <input type="checkbox"/> Project work <input type="checkbox"/> Seminar <input type="checkbox"/> Distance learning <input type="checkbox"/> Blended learning <input type="checkbox"/> 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 losses 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