Title	Code
(Fizyka)	**1010134221010410392**
Field: **Environmental Engineering Extramural First-cycle studies**	Year / Semester: **1 / 2**
Specialty: **-**	Course: **core**
Hours: Lectures: **3** Classes: **28** Laboratory: **-** Projects / seminars: **-**	Number of credits: **6**
	Language: **polish**

Lecturer:

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Status of the course in the study program:

General subject

Assumptions and objectives of the course:

As a result of teaching course of general physics one ought expect good background in physics as outcome giving a base for the logical presentation and understanding technical problems.

Contents of the course (course description):

Mechanics: kinetics and dynamics, the law of conservation of energy, gravitational potential energy and escape velocity, power, stable and unstable equilibrium, linear momentum and collisions (momentum and its relation to force, conservation of momentum, elastic and inelastic collisions, center of mass), rotational motion (rotational dynamics, angular momentum and its conservation, rotational kinetics energy). Thermodynamics: general definitions, temperature, thermodynamics laws. Kinetic-molecular gas theory. Electrical and magnetic fields: electric charge & charge conservation, insulators and conductors, Coulomb's law, the electric field (point charge, dipole), motion of a charge particle in an electric field, Gauss? law and its application, electric potential, capacitance and resistance, circuits. Wave and quantum optics: wave nature of light and wave-matter interactions (reflection and refraction, interference, diffraction, polarization), photon theory of light and the photoelectric effect, Compton effect, wave-particle duality, wave nature of matter and de Broglie'a hypothesis, laser. Thermal radiation. Solid state physics: the electric and magnetic properties of solids, insulators, metals and semiconductors, the light-emitting diode and transistor. Nuclear physics: nuclear and atomic models, physical properties of the atomic nuclei, nuclear physics application, radioactivity, interactions of elementary particles. Introduction to quantum physics, quantum mechanics and theory of relativity: Heisenberg?s uncertainty principle, relativity of time intervals and length (time dilatation and the twin paradox, length contraction), Newtonian mechanics and relativity (four-dimensional space-time, Galilean and Lorentz transformations, relativistic mass, energy and mass.

Introductory courses and the required pre-knowledge:

Physics and Mathematics Courses (Secondary School level)

Courses form and teaching methods:

Traditional presentation, films and projector

Form and terms of complete the course - requirements and assessment methods:

Current tests during auditory classes, and final examination.

Basic Bibliography:

Additional Bibliography: