

Course Description

Discipline/Course: Physical principles of radiation interaction with matter.

Programme for bachelor students of the “Plasma-beam and electric discharge technologies” profile

Department of Department of High Voltage Engineering and Electrophysics

Instructor: Alexander Pushkarev, Doctor in Physics, Professor

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Learning Outcomes:

Students will be able to understand the basic physical laws of interaction of charged particles and photons with matter and apply this knowledge when working in various fields of science, technology and medicine, involving the use of ionizing radiation. Namely, with the use of scientific and technical reference books, they will be able to calculate the radiation field characteristics of any kind of source; use software packages for calculation of fields of ionizing radiation.

Course Outline:

Section 1. Introduction to physics of radiation interaction with matter;

Section 2. Elastic collisions of charged particles;

Section 3. Cross section of ionization of an atom by charged particles;

Section 4. Пробеги заряженных частиц в веществе;

Section 5. Scattering of electromagnetic waves by a system of charges.

Course Delivery: one semester

Final Assessment: pass/fail test

Course Developer: Alexander Pushkarev, Doctor in Physics, Professor