

Course Summary

Course Title: RADIOECOLOGY

Credits: 3 (108 h.)

Course objective

Mastering theoretical knowledge and practical skills in the sphere of identifying the human exposure doses of ionizing radiation of anthropogenic and natural origin. Study the fundamentals of dosimetry and radiometry, as well as their practical application.

Course tasks

Study of the radiation effect on human and biosphere elements; definition the “radiation dose – organism response”; methods and ways development for human protection from internal and external radiation sources; development of means and methods of irradiation measurement; establishing the norms doses for all elements of the biosphere.

Course outlines

The history of radioecology, the basic concepts. Ionizing radiation classification. Earth radiation background composition. Sources of territories and water radioactive contamination. Biological radiation effects on human. Acute and chronic radiation sickness, their stage. Dosimetry and radiometry fundamentals. Ionizing radiation indication methods. Radiation safety fundamentals. Rationing radiation exposure to the public and staff in accordance with the rules NRSU-97. Nuclear power, status and prospects for development. Environmental problems of the nuclear cycle. Nuclear weapons, consequence of the application to the Earth biosphere.

Learning outcomes

After completing the course the students should be able to:

- classify the ionizing radiation;
- know the radiation biological influence on the human organism;
- classify the Earth background radiation;
- know the sources of ionizing radiation;
- use the methods of dosimetry and radiometry for assessment of radiation environmental state;
- know the basics of radioactive contamination standardization;
- use the methods and ways for human protection from internal and external radiation sources;
- analyze the state of nuclear power and nuclear fuel cycle on the whole;
- assess the consequence of the nuclear weapons use to the biosphere.

Training activities: lectures and lab studies.

End-of-the-term assessment: examination.

**Head of the Ecology Department,
Professor A.I. Gorova**