

## **Course Summary**

**Course Title: RADIOBIOLOGY**

**Credits: 4.5 (162 h.)**

### **Course objective**

Theoretical knowledge and practical skills acquisition in the sphere of assessment and prevention of adverse effects from ionizing radiation impact on the environment and living organisms

### **Course tasks**

Knowledge about the mechanisms of ionizing radiation biological effects of on living organisms and the fundamentals of radiation protection formation.

### **Course outline**

The history of Radiobiology and basic concepts. Determination of radiobiology as a Science. Methodology of Radiobiology. Physical basis of Radiation Biology. Ionizing radiation and environment. The interaction of ionizing radiation with the environment. Singularity of radioactive substances impact on living organisms. Radiobiological effects of radioactive substances on plants and animals. Approaches to income and accumulation of radioactive substances in living organisms rate setting. The concept of radiation damage to the organism modification. Antiradiation biological protection and sensitization of radiation damage. Physical radioprotective and radiosensitizing factors. Radioprotective and radiomodifying factors definition. The concept of post-radiation recovery. Classification of radiation recovery ways: repairing, repopulation, regeneration, compensatory restoration. Ways of ionizing radiation use in different fields of science, medicine, engineering and agriculture.

### **Learning outcomes**

After completing the course the students should be able to:

- Use the methods of dosimetry and radiometry for radiation state of environment and its separate components assessment;
- Assess the effects of ionizing radiation on living organisms;
- Determine the regularity of ionizing radiation influence on human, plants and animals at different levels of their organization;
- Predict the patterns of radionuclides distribution in natural environment and the laws of their intake and elimination from living organisms;
- Use the radioprotectors for radioprotective defense.

**Training activities: lectures and practical studies.**

**End-of-the-term assessment: examination.**

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