

**The Midterm Exam program**  
**on the discipline « Technology of radiation safety » for students of the fourth year of the**  
**speciality «6D060500 – Nuclear Physics»**

The proposed Midterm Exam program on discipline « Technology of radiation safety » is made according to the discipline syllabus. The program determines the requirements for the levels of mastering the academic discipline: what the student should have an idea after studying the course for 7 weeks, which should know what skills and habits should be formed. At Midterm Exam, students will be asked two theoretical questions and one task.

Midterm addresses the following questions:

1. Introduction to Radiation
2. List of radiation elements and characteristics
3. Ionizing radiation: Ultraviolet radiation
4. X-ray
5. Alpha decay
6. Beta decay
7. Gamma decay
8. Radioactivity in material
9. Working with radiation
10. Guiding principles: Justification, Optimisation, limitation.
11. Risk control when we work
12. Safety theory
13. Physical Forms of Radiation

### **BIBLIOGRAPHY**

**Basic:**

1. Zanzonico P. Routine Quality Control of Clinical Nuclear Medicine Instrumentation: A Brief Review. *J Nucl Med.* 2008;49(7):1114–1131
2. "Radiation". The free dictionary by Farlex. Farlex, Inc. Retrieved 2014-01-11.
3. Moulder, John E. "Static Electric and Magnetic Fields and Human Health".
4. Balashov, Vsevolod Viacheslavovich., and Gil B. Pontecorvo. *Interaction of Particles and Radiation with Matter.* Berlin: Springer, 1997. Print.
5. Ball, John, Adrian D. Moore, Steve Turner, and John Ball. *Ball and Moore's Essential Physics for Radiographers.* Chichester, UK: Blackwell Science, 2008. Print.

**Additional:**

1. Mozumder, A., and Y. Hatano. *Charged Particle and Photon Interactions with Matter: Chemical, Physicochemical, and Biological Consequences with Applications.* New York: Marcel Dekker, 2004. Print.
2. Petrucci, Ralph H., William S. Harwood, F. Geoffrey. Herring, and Jeffrey D. Madura. *General Chemistry: Principles and Modern Applications.* Upper Saddle River, N.J.: Pearson Education, 2007. Print.