

**The Midterm Exam program
on the discipline « Basic principles of Modern Physics » for students of the fourth year of
the specialty «6M060400 – Physics»**

The proposed Midterm Exam program on discipline « Nuclear interactions in high density star matter » 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. History of the nuclear physics.
2. Types of nuclear reactions and physical fundamentals.
3. Production of electrical and heat energy.
4. Basic nuclear-physical concepts.
5. Nuclear Reactors.
6. The main structural units of hulls and process equipment
7. Requirements for radiation resistance of structural materials and fuel.
8. Nuclear-energy transport installations.
9. Nuclear power transport installations.
10. Nuclear energy in the world. Conditions and prospects
11. Nuclear technologies
12. The main types of nuclear reactors
13. The basic nuclear-physical concepts.

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".

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.