THIRD YEAR (V AND VI SEMESTER)

<table>
<tr><td rowspan="2">Program</td><td colspan="2">Level of studies</td><td colspan="2">First cycle</td></tr>
<tr><td colspan="2">Program name</td><td colspan="2">Educational physics</td></tr>
<tr><td>Course name</td><td colspan="4">INTRODUCTORY NUCLEAR PHYSICS</td></tr>
<tr><td>Course ID</td><td>Semester</td><td>Course status</td><td>ECTS</td><td>L+E</td></tr>
<tr><td>PHY5411</td><td>V</td><td>MANDATORY</td><td>4</td><td>2+1</td></tr>
<tr><td>Lecturer</td><td colspan="4">Prof. dr. Elvedin Hasović</td></tr>
<tr><td>Aims and intended learning outcomes</td><td colspan="4">The goal of the course is to introduce the phenomena and physical laws at the level of individual atoms and its nuclei.
At the end of the course the student should be able to:
- know the basic properties of nuclear forces;
- know the basic properties of the nucleus;
- apply the law of radioactive decay;
- explain and analyze the occurrence of radioactive decay, fission and fusion;
- solve numerical and conceptual problems in nuclear physics.</td></tr>
<tr><td colspan="5">Course content</td></tr>
<tr><td colspan="5">Nuclear properties. Dimension and shape of the nuclear core. Nuclear forces. Angular momentum and parity. Nuclear binding energy. Deuteron. Nucleon-Nucleon scattering. Nuclear models. Discovery of radioactivity. The law of radioactive decay. Radioactive series. Natural radioactivity. Alpha, beta and gamma decay. Artificial radioactivity. Nuclear reactions. Determination of age of a sample. Nuclear fission. Defect of mass. The process of nuclear energy release. Fission reactors. Nuclear fusion. Requirements for thermonuclear fusion. Fusion reactors. Interaction of radiation with matter.</td></tr>
<tr><td colspan="2">Student workload (hours)</td><td colspan="3">Grading</td></tr>
<tr><td>Lectures and Exercises</td><td>45</td><td>Assessment method</td><td colspan="2">Points</td></tr>
<tr><td>Exam preparation</td><td>55</td><td>Course Test</td><td colspan="2">50</td></tr>
<tr><td>Total</td><td>100</td><td>Final Exam</td><td colspan="2">50</td></tr>
<tr><td></td><td></td><td>Total</td><td colspan="2">100</td></tr>
<tr><td colspan="5">Literature</td></tr>
<tr><td colspan="5">1. Lecture Notes.
2. N. Tanović, L. Tanović, Fizika : osnove atomske i nuklearne fizike, Sarajevo : Uniprint, 1991
3. S. Bikić, Zbirka riješenih zadataka iz fizike, Zenica : Dom štampe, 1998
4. L. Marinkov, Osnovi Nuklearne fizike, PMF Novi Sad, 2010.
5. R. A. Serway, C. J. Moses, C. A. Moyer, Modern Physics, Thomson Learning, 2005.
6. K. S. Krane, Introductory nuclear physics, John Wiley & Sons, 1985.</td></tr>
<tr><td colspan="5">Remarks</td></tr>
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