

THIRD YEAR (V AND VI SEMESTER)

Program	Level of studies		First cycle	
	Program name		Physics	
Course name	INTRODUCTORY NUCLEAR PHYSICS			
Course ID	Semester	Course status	ECTS	L+E
PHY5411	V	MANDATORY	4	2+1
Lecturer	Prof. dr. Elvedin Hasović			
Aims and intended learning outcomes	<p>The goal of the course is to introduce the phenomena and physical laws at the level of individual atoms and its nuclei.</p> <p>At the end of the course the student should be able to:</p> <ul style="list-style-type: none"> - 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. 			
Course content				
<p>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.</p>				
Student workload (hours)		Grading		
Lectures and Exercises	45	Assessment method	Points	
Exam preparation	55	Course Test	50	
Total	100	Final Exam	50	
		Total	100	
Literature				
<ol style="list-style-type: none"> 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. 				
Remarks				