

Study Programme: Bachelor Academic Studies in Physics			
Course Unit Title: Neutron Physics			
Course Unit Code: F18NEUTF			
Name of Lecturer(s): Full Professor Dusan Mrdja			
Type and Level of Studies: Bachelor Academic Degree			
Course Status (compulsory/elective): Elective			
Semester (winter/summer): Summer			
Language of instruction: English			
Mode of course unit delivery (face-to-face/distance learning): Face-to-face			
Number of ECTS Allocated: 6			
Prerequisites: Nuclear Physics			
Course Aims: To teach students about the main aspects of neutron physics			
Learning Outcomes: Understanding the principles of neutron physics. Ability to follow the latest results in this research field.			
Syllabus: <i>Theory</i> Discovery of neutron. Characteristics of neutron. Sources of neutrons. Neutron generators. Neutrons of cosmic origin. The detection of neutrons. Neutron spectrometers. Neutron reactions and cross-sections. Interference and diffraction of neutrons. The absorption of neutrons and neutron radiography. Neutron activation analysis. Moderation of neutrons. The mechanism of slowing down neutrons in moderator. The average energy loss of neutron per collision. Diffusion of neutrons. Diffusion equation of monoenergetic neutrons. Diffusion constant. Neutron balance. Boundary conditions for diffusion of neutrons. Induced nuclear fission. Neutrons from fission. Chain reaction. <i>Practice</i> -			
Required Reading: 1. P. Reuss, Neutron Physics, E DP Sciences, 2008. 2. G.E.Bacon, Neutron Physics, Wykeham Publications, London, 1969. 3. K.S.Krane, Introductory Nuclear Physics, John Wiley and Sons, Inc., 1988.			
Weekly Contact Hours:	Lectures: 3	Practical work: 2	
Teaching Methods: Lectures, practical work and seminars			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	Final exam	points
Active class participation	5	written exam	
Practical work	10	oral exam	70

Preliminary exam(s)		
Seminar(s)	15		
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			