

<b>Study Programme:</b> Physics		
<b>Course Unit Title:</b> Polymer nanocomposites and their applications		
<b>Course Unit Code:</b> FD18PNP		
<b>Name of Lecturer(s):</b> dr Nevena Čelić		
<b>Type and Level of Studies:</b> PhD Physical Sciences		
<b>Course Status (compulsory/elective):</b> elective		
<b>Semester (winter/summer):</b> summer		
<b>Language of instruction:</b> English		
<b>Mode of course unit delivery (face-to-face/distance learning):</b> face-to-face		
<b>Number of ECTS Allocated:</b> 15		
<b>Prerequisites:</b>		
<b>Course Aims:</b> Students obtain the basic knowledge of physics of nanocomposites and their applications.		
<b>Learning Outcomes:</b> After finishing the course, students should have developed:  - General abilities: basic knowledge from this field, following the literature;  Subject-specific abilities: students have an insight into the newest achievements in the field of polymer nanocomposites; students learn about their structure, types, design, synthesis techniques, characterization and applications.		
<b>Syllabus:</b> <i>Theory</i> Fundamental materials in the technology of polymer nanocomposites. Polymer nanocomposites based on layered silicates. Polymer nanocomposites based on carbon nanotubes and nanofibers. Polymer nanocomposites based on inorganic nanoparticles. Composites of conductive polymers and inorganic nanoparticles. Characterization of polymer nanocomposites. Applications of polymer nanocomposites.  <i>Practice</i> Solving practical problems related with this area of science.		
<b>Required Reading:</b>		
<b>Weekly Contact Hours:</b>	<b>Lectures:</b> 6	<b>Practical work:</b> 4
<b>Teaching Methods:</b>  1 Siegmur Roth, David Caroll, <i>One – Dimensional Metals</i> , WILEY-VCH Verlag GmbH & Co., Weinheim, 2004. 2 L. H. Sperling, <i>Introduction to Physical Polymer Science</i> , John Wiley & Sons, Inc., New Jersey, 2006. 3 M. Rubinstein and R.H. Colby, <i>Polymer Physics</i> , Oxford University Press, 2003. 4 J.M.G. Cowie and V. Arrighi, <i>Polymers: Chemistry and Physics of Modern Materials</i> , 3rd edition, CRC Press 2007. 5 F. Gao, <i>Advances in polymer nanocomposites</i> , Woodhead publishing, USA, 2012. 6 P. M. Ajayan, L. S. Schadler, P. V. Braun, <i>Nanocomposite Science and Technology</i> , WILEY-VCH Verlag GmbH & Co., Weinheim, 2003. 7 D. M. Petrović, S. R. Lukić, <i>Eksperimentalna fizika kondenzovane materije</i> , Edicija “Univerzitetski udžbenik”, Univerzitet u Novom Sadu, Novi Sad, 2000 8 J. A. Brydson, <i>Plastics materials</i> - 7th ed, Butterworth-Heinemann, Oxford, 1999.		

<b>Knowledge Assessment (maximum of 100 points):</b>			
<b>Pre-exam obligations</b>	points	<b>Final exam</b>	points
Active class participation		written exam	
Practical work		oral exam	70
Preliminary exam(s)		.....	
Seminar(s)	30		
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			