

Course title: Amorphous materials	
Status: elective	
ECTS: 6	
Requirement: Introduction to Condensed Matter Physics	
Learning objectives Introducing students with the properties of non-crystalline systems.	
Learning outcomes - Knowledge about specificity of the particular types of amorphous materials - Knowledge in processing and technology of materials -General ability to follow the professional literature -Ability to implement certain technical solutions	
Syllabus <i>Theoretical instruction</i> Non-crystalline materials. Amorphous materials. Physicochemical properties of amorphous materials. The procedure of obtaining glasses and amorphous films. Amorphous semiconductors and glass-ceramics. General properties. Amorphous silicon and germanium. The electron state theory in amorphous semiconductors. Electrical and dielectric properties. Application of amorphous semiconductors and glass-ceramics in optoelectronics. Optical and spectroscopic characteristics of amorphous materials. Thin films. Photo-induced changes. Holography. Application of amorphous materials in the forms of bulk and film for optical mediums. Amorphous selenium and tellurium. Amorphous metals. Complex amorphous systems. <i>Practical instruction</i> Experimental measurements and preparation and defence of seminar works that follow and supplement the lecture program.	
Recommended literature 1. D.M. Petrović, S.R. Lukić, <i>Eksperimentalna fizika kondenzovane materije</i> , Edicija "Univerzitetski udžbenik", Univerzitet u Novom Sadu, Novi Sad, 2000. 2. S.R.Lukić, D.M.Petrović, <i>Složeni amorfni halkogenidi</i> , PMF Novi Sad - Grafo atelje, Novi Sad, 2002. 3. M.A. Popescu, <i>Non-crystalline Chalcogenides</i> , Kluwer Academic Publishers, New York, 2002. 4. M. Fox, <i>Optical Properties of Solids</i> , University Press, Oxford, 2005. 5. W.Vogel, <i>Kemija stakla</i> , Zagreb, 1985. 6. Э.А. Сморгонская, К.Д. Цэндин, и: <i>Электронные явления в халькогенидных стеклообразных полупроводниках</i> , ред.: Цэндин К.Д., Наука, Санкт-Петербург, 1996. 7. N.F. Mott and E.A. Davis, <i>Electronic Processes in Non-Crystalline Materials</i> , (Clarendon Press, Oxford, 1971). 8. L.P. Kazakova, E.A. Lebedev, E.A. Smorgonskaya at al., <i>Electronic Phenomena in Chalcogenide Glassy Semiconductors</i> , p.486, (in russian), (Nauka, Sankt-Peterburg, 1996) 9. A. Feltz, <i>Amorphe und Glasartige Anorganische Festkörper</i> , p.556, (Akademie – Verlag, Berlin, 1983). 10. Z.U.Borisova, <i>Glassy Semiconductors</i> , Plenum Press, New York, 1981. 11. A. Madan, M. P. Shaw, <i>The Physics and Applications of Amorphous Semiconductors</i> , Academic Press, Inc., Boston - San Diego, 1988. A. Zakery S.R. Elliott, <i>Optical Nonlinearities in Chalcogenide Glasses and their Applications</i> , Springer Berlin, 2007	
Weekly teaching load	
Lectures: 3	Exercices: 2