

Course title: Optical communications				
Course code	Course status	Semester	Number of ECTS credits	Lecture hours
PA3102	Mandatory	I	6	3L+0E+1Lab
Study program: Graduate academic studies, ELECTRICAL ENGINEERING, study program: Electronics, Telecommunications and Computer engineering (studies last for 4 semesters, 120 ECTS credits).				
Prerequisites: No prerequisites required.				
Course aims: Students will be introduced with basic elements of signal transmission over optical communication systems. The following topics will be considered: the types of optical fibres, the principles of propagation in the optical fibre, modulation procedures, measurements on optical fibres, The basic concepts of the switching systems and wavelength multiplexing including DWDM. Also, the students will be introduced with the optical tools and basic types of optical cables.				
Teacher(s) first and last names: <i>Doc. dr Zoran Veljović</i>				
Studying method: Lectures, exercises, laboratory exercises, consultations.				
Course synopsis:				
Preliminary week	Preparation and semester enrolment.			
I week	Introduction. The importance of optical communication. History and development. Perspectives.			
II week	The basic of electromagnetic waves propagation in conducting structures.			
III week	Types of optical fibres. The attenuation and loss in optical fibre. Dispersion. Nonlinear effects.			
IV week	Optical emitters. Optical receivers. Other components of optical communication system.			
V week	Cables with optical fibres. Cable tools.			
VI week	I colloquium			
VII week	Free week			
VIII week	Methods for determining characteristics of optical fibre.			
IX week	Geometrical characteristics of fibre. Mechanical features. Resistance to the outer influences.			
X week	Multiplex over wavelengths. DWDM.			
XI week	Optical networks. Configuration. Perspectives of complete optical network.			
XII week	II colloquium			
XIII week	Optical switches.			
XIV week	Design of optical connecting routes.			
XV week	Correction of the colloquiums.			
XVI week	<i>Final exam</i>			
Final week	Administrative procedures.			
XVIII-XXI week	Additional lessons, correction of the final exam and administrative procedures.			
STUDENT WORKLOAD				
<u>per week</u>		<u>per semester</u>		
Working hours: 6 credits x 40/30 = 8 hours.		Teaching and the final exam: (8hours) x 16 = 128hours.		
Working hours structure:		Necessary preparation (before semester): 2 x (8hours) = 16hours.		
3 hours for teaching		Total work hours for the course: 176hours		
1 hour for exercises		Additional hours for preparing correction of the final exam, including the exam taking: up to 36hours.		
4 hours for individual work, including consultations.		Work hours structure:		
		128hours (lectures) + 16hours (preparation) + 32hours (additional work)		
Lessons attendance is mandatory for students, as well as doing home and seminar works, etc.				
Literatura: Aleksandar Marinić, Optical communications, Univerzity of Belgrade, Belgrade, 1997. John M. Senior, Optical Fiber Communications, Principles and Practice, 2 nd Edition, Pearson Education Ltd, 1992. M. Bjelica, P. Matavulj, D. Gvozdić, Collection of problems in optical telecommunications, Belgrade, 2005.				
Oblici provjere znanja i ocjenjivanje:				
- Activitie during lectures carry 10 points,				
- Each colloquiums carries 20 points (40 points in total)				
- Final exam 50 points.				
Student gets the passing grade by collecting 50 points at least.				
Special remarks for the course: The lectures are organized for 40 students per group, and laboratory exercises for 5 students per group.				
Teacher(s) who provided the information: <i>Doc. dr Zoran Veljović</i>				
Note:				