

Study program: Modern computer technologies			
Course title: Opto-laser Technologies			
Professor/assistant: Danijela A. Aleksić			
Type of course: elective			
ECTS credits: 5			
Pre-requisites: Digital electronics			
Aims of the course: The purpose of this course is to provide necessary skills and knowledge and introduce students to the operation of semiconductor opto-electronic devices from the point of view of their technology and implementation within communication technologies.			
Learning outcomes: The outcome is to train and profile experts who can work on design, development and maintenance of opto-electronic communication systems.			
Syllabus			
<i>Theoretical part</i> Emission and absorption of light. Types of electron emission. Types of absorption in semiconductors. External and internal photoelectric effect. Liquid crystals. Optical waveguide. Fiberoptics. Signal loss in optical fibers. Group delay and dispersion in fiber. Optical transmitters and receivers. Optical transmission systems. Lasers.			
<i>Practical part</i> Practice, other forms of study and research work. Emission and absorption of light. Types of electron emissions. Types of absorption in semiconductors. External and internal photoelectric effect. Liquid crystals. Optical waveguide. Fiberoptics. Signal loss in optical fibers. Group delay and dispersion in fiber. Optical transmitters and receivers. Optical transmission systems. Lasers.			
Literature 1. Jose Miguel Lopez-Higuera: Handbook of optical fiber sensing technology, John Wiley & Sons, Ltd, 2002, England. 2. J. Dakin, B. Culshaw: Optical Fiber Sensors, Artech house Inc, 1988, United States. Eugene Hecht: Optics, Addison Wesley Longman Inc, 1998, United States.			
Number of active classes			Other forms of teaching:
Lectures: 30	Practical classes: 30	Research work:	
Teaching methods Combination of interactive approach with practical problem solving.			
Grading system (maximum 100 points), grading scale from 5 to 10: below 51 points grade 5, grade 6 from 51-60 points, grade 7 from 61-70 points, grade 8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91-100 points.			
Pre-exam obligations	points	Final exam	points
activity during theoretical lectures	20	written exam	30
practical training	30	oral exam	
colloquium(s)/seminar papers	20		
Sum	70	Sum	30