

Study program: Multimedia communication technologies			
Course title: Digital telecommunication systems			
Professor/assistant: Nikola Sekulović, Ph. D			
Type of course: compulsory			
ECTS credits:			
Pre-requisites: none			
Aims of the course: Introducing students with different digital transmission techniques and their application.			
Learning outcomes: After this course, it is expected that students are able to understand requirements and problems in digitalization process, transmission process, voice, music and video signal processing and to evaluate quality of service in system. Students are trained to simulate and analyze concrete digital systems in appropriate program packages.			
Syllabus			
<i>Theoretical part</i> Digital telecommunication system model. Information term. Stochastic signals. Statistical characteristics of voice, musical and video signals. Noise and classification by origin, spectrum, influence and statistical characteristics. Interference. General sampling theorem. Vector quantization. Quantization noise. Differential pulse code modulation. Delta modulation. Source coding. Classification and comparative characteristics of line codes. Intersymbol interference. Nyquist criteria. Eye diagram. Jitter. Comparative analysis of digital modulation techniques. Spread spectrum. CDMA. OFDMA. Optimal detection. Comparative transmission characteristics of wired and wireless media.			
<i>Practical part</i> Practical problems solving from lecture units.			
Literature 1. G. Lukatela, D. Drajić, G. Petrović, R. Petrović, <i>Digitalne telekomunikacije</i> , Gradjevinska knjiga, Beograd, 1984. 2. M. Dukić, <i>Principi telekomunikacija</i> , Akademska misao, Beograd, 2008. 3. I. Stojanović, <i>Osnovi telekomunikacija</i> , Gradjevinska knjiga, Beograd, 1973.			
Number of active classes			Other forms of teaching:
Lectures: 45	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	10	written exam	20
practical training	50	oral exam	20
colloquium(s)/seminar papers			
Sum	60	Sum	40