

Study Programme: Power, Electronic and Telecommunication Engineering (Communications Technologies and Signal Processing)			
Course Unit Title: Measurement Systems in Telecommunications			
Course Unit Code: EK301			
Name of Lecturer(s): Boris Antić			
Type and Level of Studies: Bachelor level			
Course Status (compulsory/elective): compulsory			
Semester (winter/summer): summer			
Language of instruction: english			
Mode of course unit delivery (face-to-face/distance learning): face-to-face			
Number of ECTS Allocated: 4			
Prerequisites: none			
Course Aims: Acquiring the knowledge in the field of measurement systems in telecommunications.			
Learning Outcomes: Getting acquainted with measurement principles in digital communications. Ability to perform and analyze fundamental tests for the characterization of digital communication systems. Hands on experience in attesting and fault measurements on the first and second OSI layer in copper access networks.			
Syllabus: Fundamentals of measurements in digital communications • Conformance tests • Functional tests • Performance tests • Protocol analysis • Quality of service tests • OSI referent model • Standards and recommendations • Systems of physical quantities and arithmetical operations with units of special interest in communication systems • Measurement errors and processing of measurement results • BERT • BLERT • Synchronization with measured signal • Measuring jitter in time and frequency domain • Fundamentals of copper access networks • Physical parameters of copper cables • Faults and measurement logistics • Characteristic cases of faults in copper access networks and overview of methods suitable for their location • Measurement diagnostics (ground resistance, fault voltage and isolation resistance measurements) • Measuring bridges for fault pre-location • Time domain reflectometry • Cable routers and tracers			
Required Reading: Relevant literature in English TBD			
Weekly Contact Hours: 3		Lectures: 2	Practical work: 1
Teaching Methods: Lectures. Auditory Practice. Laboratory Practice.			
Knowledge Assessment (maximum of 100 points): 100			
Pre-exam obligations	points	Final exam	points
Laboratory exercise defense	30	Written part of the exam	70

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam,

project presentation, seminars, etc.