

<b>Level:</b> bachelor				
<b>Course title:</b> Basics of digital electronics				
<b>Status:</b> elective				
<b>ECTS:</b> 8				
<b>Requirements:</b> None				
<b>Learning objectives</b>				
Introduction to the basic digital circuits and digital systems work.				
<b>Learning outcomes</b>				
Upon completion of the course students should have developed:				
General skills: Possession of good knowledge of most logic circuits on the functioning of digital systems;				
Subject-specific skills: Understanding of certain electronic devices and circuits. Understanding of the basic and complex logic circuits and memories.				
<b>Syllabus</b>				
<i>Theoretical instruction</i>				
Fundamentals. Signals and signal transmission. Passive electronic components. Semiconductor materials. Pure and impurity semiconductors. PN junction and characteristics. Real semiconductor diodes and semiconductor lasers. Bipolar transistor and FETs. Amplifiers. Integrated circuits. Operational amplifier and applications. Transistors as switching elements. Multivibrators. The basic logic circuits. A complex logic circuits. Adders. Addition of binary numbers. Flip-flops - RS, D, JK, JK-MS. Registers and shift registers. Converters. Counters. Decoders. Digital memory. Basics of connecting analogue and digital systems. A / D and D / A conversion.				
<i>Practical instruction</i>				
Experimental exercises: Operational amplifier. The basic logic. TTL and CMOS Decoder. RS and D flip-flop. Counters.				
<b>Weekly teaching load</b>				Other: 0
Lectures: 3	Exercises: 3	Other forms of teaching: 0	Student research: 0	