Course Unit Descriptor

Study Programme: Physics	
Course Unit Title: Fundaments of electronics	
Course Unit Code: F18OEL	
Name of Lecturer(s): Full Professor Zoran Mijatović	
Type and Level of Studies: Bachelor Academic Degree	
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: 7	
Prerequisites: Electromagnetism	

Course Aims:

To teach students about the main aspects of electronics.

Learning Outcomes:

Understanding the principles of semiconductors, functioning of basic electronic circuit. Ability for practical work in electronics.

Syllabus:

Theory

Basic terms. Signals and signal transmission. Passive electronic components. Semiconductors, intrisic and extrinsic. pn junction and it's characteristics. Real semiconductor diodes and laser. BJT and FETs. Amplifiers. Ics. Operational amplifier with applications. BJT as switching device. Multivibrators. Logic gates. Flip-flops. Registers. Counters. Correspodence between analog and digital signals. A/D and D/A conversion.

Practice

Pn junction. Photodiode and LED. Hall effect. BJT characteristics with common emitter. Characteristics of MOSFET. Amplitude and frequency characteristics of one stage amplifier. Operational amplifier. Logical gates. RS and D flip-flops.

Required Reading:

1. M. N. Horenstein, Microelectronic Circuits and Devices, Prentice Hall International Editions, New Jersey, 1996.

Weekly Contact Hours:	**Lectures:** 3	**Practical work:** 3

Teaching Methods:

Lectures and students group work

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	Final exam	points
Active class participation	5	written exam	30
Test I and Test II	15	oral exam	40
Preliminary exam(s)	5	…….	
Seminar(s)	5		

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

project presentation, seminars, etc.