Assessment and subject description

Óbuda University Kandó Kálmán Faculty of Electrical Engineering			Institute of Automation	
Subject name and code: **Power electronics** **KUTE1KAND** **Credits:** **Full-time,** 2020/2021 academic year I. semester				
Course: **Electrical Engineering**				
Responsible:		Teaching staff:	**Badacsonyi Ferenc**	
Prerequisites:				
Contact hours per week:	Lecture: **2**	Class discussion: 0	Lab hours: **0**	Tutorial: 0
Assessment and evaluation:	end of term mark			

Subject description

Aims: To offer a basic knowledge of switch mode converter circuits, the operation and main calculation of them.

Topics to be covered:

Topics	Week	Lessons
The concept of power electronics.	1.	2
Switch mode semiconductors (thyristors, diode, BJT, MOSFET, IGBT) features, characteristics and warming.	2.	2
Single phase line commutated rectifiers.	3.	2
Three phase line commutated rectifiers.	4.	2
Single and three-phase AC regulators.	5.	2
Modelling of power electronics circuits	6.	2
One quadrant DC-DC chopper circuits (buck, boost, buck-boost).	7.	2
DC-DC bridge chopper circuits	8.	2
Single phase voltage inverters (phase shift, one-phase sinusoidal PWM).	9.	2
Six-step and three-phase sinusoidal PWM inverters.	10.	2
Grid connected photovoltaic inverter topologies	11.	2
Advanced power electronics (UPS, PFC circuits, power supplies).	12.	2
Modelling of power electronics circuits	13.	2
Test	14.	2

Assessment and evaluation

Requirements of the end of term mark: Successful classroom test writing

Suggested materials

Badacsonyi Ferenc: Power electronics examples (pdf), Power electronics handbook: devices, circuits, and applications handbook/ edited by Muhammad H. Rashid. – 3rd ed. Copyrightc 2011, Elsevier Inc.;