

<b>Óbudai Egyetem</b> Kandó Kálmán Villamosmérnöki Kar		Műszertechnikai és automatizálási Intézet		
<b>Tantárgy neve és kódja: Automation</b> <b>KMAAU11AND Kreditérték: 2</b>				
<i>nappali tagozat</i> <i>tavaszi félév</i>				
Szakok melyeken a tárgyat oktatják: Villamosmérnöki szak				
Tantárgyfelelős oktató:	Dr. Csuka Antal		Oktatók:	
Előtanulmányi feltételek: (kóddal)				
Heti óraszámok:	Előadás: <b>2</b>	Tantermi gyak.: <b>0</b>	Laborgyakorlat: <b>0</b>	Konzultáció:
Számonkérés módja (s,v,f):	<b>Félévközi jegy</b>			
<b>Curriculum</b>				
<i>Educational Aim:</i> Learning the basic concept of the open and closed loop control. Review the theoretical background of closed loop control, structure of a control system, signals and basic control blocs. Time response, frequency response, steady state characteristics. Process control basics, some process automation problems and solutions. . Equipments used in controls system: Industrial Buses, Process Automation Equipments, PLC systems.				
<b>Class schedule:</b>				<b>Hours:</b>
1. Introduction. Review the theoretical background of closed loop control. Structure of the control system, signals and basic control systems. Standard test signals.				<b>2</b>
2. Transfer functions of a feedback loop. Time domain response of a feedback loop. Steady state error, overshoot...				<b>2</b>
3. Stability of a closed loop system. Stability examination.				<b>2</b>
4. Structure of a classical PID controller. Tuning controllers. Multi loop systems. Cascade controller.				<b>2</b>
5. Basic concepts of Process automation. Process automation problems				<b>2</b>
6. Structure of a process automation system. Used equipments,				<b>2</b>
7. PLC programming (Ladder, FB, SFC, CFC...)				<b>2</b>
8. Automatic control systems, PLC systems. PLC categories				<b>2</b>
9. Industrial buses (eg. MODBUS, INTERBUS, ASI BUS, ...)				<b>2</b>
10. Industrial Ethernet, Industrial wireless networks				<b>2</b>
11. Review of the basic sensors.				<b>2</b>
12. Review of the basic actors.				<b>2</b>
13. Integrated control system. Review of the whole semester.				<b>2</b>
14. Small group conversation and oral examination.				<b>2</b>
<b>Requirements</b>				
Attendance of the lecture is compulsory (you are allowed to be absent only 2 times). Each student has to give a short (from 20 to 25 minute) presentation on a given or chosen topic.				
Type of the examination: self made presentation and oral examination and conversation.				
<b>Recommended readings:</b>				
Depending on the chosen topic.				