

COURSE AND EQUIPMENT OVERVIEW

Electrical fundamentals	¥ -II-	Electronics	¥ - -	Digital electronics and microcomputer technology	N E	Building management systems		Power electronics		Communication technology		Measurement technology		Automation	<u> </u>	Mechatronics	Auto	tomotive technology		Automotive technology	Basic equipment and accessor	ies Unitrain
DC technology CO4204-4D	0	Semiconductor components CO4204-5A	0	Gates and flip-flops CO4204-6A	0	Protective measures and power network types CO4204-4M		Self-commutated power converters CO4204-7M	2	Quadripoles and filters CO4204-9A	0	Measurement of electric values V/I/P/cos-phi/f CO4204-8A	2	Compact automation, PLC and bus technology CO4204-8N	3	Transfer system with DC drive SO4204-8K		and AC circuits in vehicles 204-7A		SO4204-7E	Basic equipment UniTrain interface	CO4203-2 <i>A</i>
AC technology CO4204-4F	1	Transistor multivibrators CO4204-5D	1	Sequential circuits CO4204-6C	0	Control systems/protective circuitry CO4204-4N		Line-commutated power converters, 3-phase CO4204-7N	2	Active filters with operational amplifiers CO4204-9B	0	Measurement of non-electric values Temp./pressure/force CO4204-8B	2	PLC model lift application SO4204-8T		Transfer system with three-phase drive S04204-8L		tronics and digital technology ehicles 204-7B	0	CAN bus	UniTrain measurement accessories (shunts, jumpers and connection cables)	CO4203-2
Three-phase technology CO4204-4H	1	Transistor and amplifier technology CO4204-5H	0	Application circuits CO4204-6E	0	LED lighting and colour detection CO4204-4P	1	Frequency converter drives CO4204-7P Requires CO4204-7M and CO4204-7T	3	Coaxial cables SO4204-9G	1	Measurement of non-electric values Displacement/angle/speed CO4204-8C	2	Sensors for automation CO4204-8U		Sorting sub-system SO4204-8M		omotive electrical fundamentals 205-1D		SO4204-1S	Required accessories Depending on the course one or more UniTrain 6	
Magnetism/electromagnetism CO4204-4A	1	Field-effect transistors CO4204-5K	0	Converter circuits CO4204-6B	0			Active power factor correction (PFC) CO4204-7Q	1	Signal transmission via optical fibres 650 nm / 820 nm CO4205-4E	2	RLC measurements CO4204-8D	2	Process technology: IPA 1 Compact station CO4204-3E	3	Assembly sub-system S04204-80		M signals in automotive ineering 204-7J	0	applications	UniTrain experimenter (quantity) Basic equipment EloTrain 2-mm plug-in sy	CO4203-2
Conducting measurements with the multimeter CO4204-4B	2	Operational amplifiers CO4204-5M	0	Fundamentals of computer technology SO4204-6H	0	Electrical power engineering	八 寿			Signal transmission via optical fibres 1300 nm CO4205-4F	0			Process technology: IPA 2 Mixing station SO4204-3F	3	Process sub-system S04204-8P		rnator/3-phase generator 204-7D	2	FlexRay	UniTrain interface EloTrain experimenter	CO4203-2 CO4203-3
Electrical network analysis CO4204-4C	0	Power semiconductor devices CO4204-5P	1	Supplement to SO4204-6H Applications and programming SO4204-6J	2	Photovoltaics CO4204-3A		Electrical machines		4-wire lines SO4204-9F	0	Automatic control technology		Process technology: IPA 3 Filling station SO4204-3G	D	Testing sub-system S04204-8Q		sors in motor vehicles 204-7F		Comfort systems and keyless entry CO4204-6G	EloTrain measurement accessories (bridge connectors and connection cables) Digital multimeter Max10	SO5146-1 LM233
Electromagnetic compatibility (EMC) CO4204-4K	1	Analog power supplies CO4204-5R	1	EloTrain 2-mm plug-in system		Transient processes in DC and AC networks CO4204-3B	1	DC machines CO4204-7S	0	Pulse modulation methods PAM/PCM/Delta SO4204-9J	3	Practical introduction to control technology		Process technology: IPA 4 Corking station SO4204-3H	D	Handling sub-system SO4204-8R	Pulse syster			Autoshop communications and RFID CO4205-1N	Recommended accessories	
Measurements using an oscilloscope CO4204-4L	1	Switched-mode power supplies SO4204-5S	1	Introduction to digital technology SO4206-1F		Fuel cell technology CO4204-3C		Asynchronous machines CO4204-7T	1	Pulse modulation methods, PTM CO4204-9K	1	Servo motor technology SO4204-8H		•		Storage sub-system SO4204-8S	Comn	nmon rail diesel injection system 204-6X		DC AC conversion in vehicles	UniTrain storage case Digital multimeter Multi 13S	CO4203-2 LM233
EloTrain 2-mm plug-in system		Circuit design using NI Multisim SO4204-5U	0	Sequential circuits SO4206-1G				Synchronous and slip-ring machines CO4204-7U	1	Modem methods ASK, FSK, PSK CO4204-9L	2			Pneumatics/hydraulics	- 1	Routing sub-system SO4204-8W	ABS/	tion control systems /ASR/ESP 204-6W		Hybrid drives in automobiles CO4204-6V	LabSoft Classroom Manager LabSoft Classroom Manager	SO2001-
DC technology SO4206-1A		PCB layout with NI Ultiboard SO4204-5V	0	Microcontroller PIC16F887 (Assembler programming) SO4206-9A				Stepper motor C04204-7W	0	AM/FM Modulation/Demodulation SO4204-9M	2			Pneumatics SO4204-8V		Buffering sub-system SO4204-8X		eel Speed Sensor Technology			Collections of assignments (for use with classroom manager) Electrical fundamentals	SO2001-6
AC and three-phase technology SO4206-1B		EloTrain 2-mm plug-in system		8-bit Microcontroller, PIC 16F1937 (UML programming) CO4205-7A				Linear motor CO4204-7X		AM transmission and receiving technology SO4204-9N	3			Electropneumatics SO4204-8F		Production line SO4204-8Z	_	ag, belt tensioners and h response 204-6Z	2	Battery disconnect unit in hybrid and	Elektronics Digital electronics	SO2001-6
		Semiconductors S04206-1C		8-bit Arduino UNO (UML programming) CO4205-7B				Three-phase transformer CO4204-7Y	1	Data acquisition using RFID SO4204-9S	2			Hydraulics / electrohydraulics SO4205-8A			EloT	Train nm plug-in system		DC-DC step-up converters in hybrid and electric vehicles	Electrical power engineering Building management systems Automotive	SO2001-6 SO2001- SO2001-
		Basic electronic circuits SO4206-1D		16-Bit Microcontroller dsPIC (UML programming) CO4205-7C				BLDC/servo motors CO4204-7Z	1	Network technology and cybersecurity CO4205-4Q	2		,				Funda	damentals of electrical ineering in vehicles		DC-DC step-down converters in hybrid and electric vehicles C04205-1L		
		Optoelectronics S04206-1E		32-Bit Microcontroller ARM (UML programming) CO4205-7D						Introduction to microwave technology SO4204-9U	0							•		Safe handling of HV systems C04205-1M		
		-	-	Programming 32-bit ARM Cortex M3 microcontrollers (C programming) SO4206-9B						Supplement to SO4204-9U Waveguide components SO4204-9V										Fuel cell technology in vehicles CO4204-6M		
				DSP using microcontroller 32-Bit ARM Cortex-M3 (C programming) SO4206-9C						Antenna technology SO4204-9T	0									Solar technology in vehicles CO4204-1P		
				FPGA - Design of circuits using VHDL SO4206-9E						Supplement to SO4204-9T Complex antenna systems SO4204-9Z										* 3 experimenters are required for extension with CAN bus course (SO4204-7K)	®	
				FPGA Altera Cyclone IV (Verilog) CO4205-7E						Microstrip technology SO4204-9Y	1										LICAS NIÏLLE	



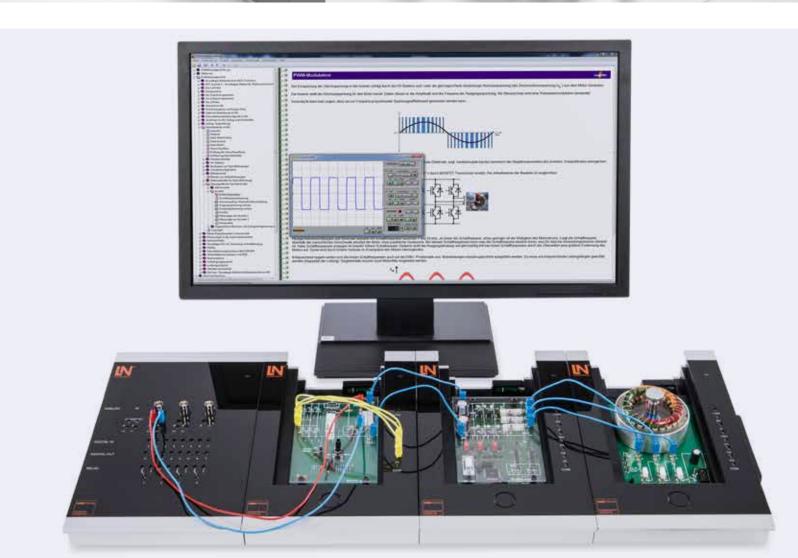
















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