

ECE209 - Logic and Computing Devices

Lab Location: Riggs 322

Lab Equipments	Model/Part No.	Supplier	Cost per Unit	Comments
NI-ELVIS II with Protoboard	NI ELVIS II 780381-01	National Instruments	\$ 2,808.00	Latest version of ELVIS II
LabVIEW 2011 Student Edition	LabVIEW 2011 Student Edition - Download	OnTheHub e-store	\$20.00	
Freescale NI ELVIS Microcontroller Prototype Board	779378-01	National Instruments	\$309.00	
Computer workstation	Optiplex 760	Dell	~ \$750.00	
Digital Works Simulator	NA	NA	\$0.00	
220Ω Resistors	13015	Electronix Express	\$0.12 (10-199) or \$0.08 (200-999)	Quantity needed 08; IEEE Kit
Red LED	08L53RD	Electronix Express	\$0.12 (1-99) or \$0.08 (10-99)	Quantity needed 01; IEEE Kit
7 Segment LED Common Anode	08LSD23265	Electronix Express	\$4.50 (1-9) or \$3.95 (10+)	Quantity needed 01; IEEE Kit
74LS04 Hex Inverter	10 74LS04	Electronix Express	\$0.40 (1-9) or \$0.35 (10+)	Quantity needed 01; IEEE Kit
74LS08 Quad 2-input AND gate	10 74LS08	Electronix Express	\$0.40 (1-9) or \$0.35 (10+)	Quantity needed 02; IEEE Kit
74LS32 Quad 2-input pos. OR gate	10 74LS32	Electronix Express	\$0.40 (1-9) or \$0.35 (10+)	Quantity needed 02; IEEE Kit
74LS47 BCD-to-7 Seg. decoder/driver (15v out)	10 74LS47	Electronix Express	\$1.25 (1-9) or \$0.95 (10+)	Quantity needed 01; IEEE Kit
74LS76 Dual JK flip-flop w/preset & clear	10 74LS76	Electronix Express	\$1.20 (1-9) or \$1.05 (10+)	Quantity needed 01; IEEE Kit

74LS83 4-bit binary full adder	10 74LS83	Electronix Express	\$1.75 (1-9) or \$1.65 (10+)	Quantity needed 01; IEEE Kit
74LS86 Quad 2-input XOR gate	10 74LS86	Electronix Express	\$0.45 (1-9) or \$0.35 (10+)	Quantity needed 02; IEEE Kit
74LS151 8-channel Dig. Multiplexer	10 74LS151	Electronix Express	\$0.70 (1-9) or \$0.60 (10+)	Quantity needed 01; IEEE Kit
74LS153 Dual 4-to-1 Multiplexer	10 74LS153	Electronix Express	\$0.70 (1-9) or \$0.60 (10+)	Quantity needed 02; IEEE Kit
74LS155 Dual 2-to-4 Decoder/Demux.	10 74LS155	Electronix Express	\$0.85 (1-9) or \$0.80 (10+)	Quantity needed 01; IEEE Kit
74LS193 4-bit Binary Up/Down Counter	10 74LS193	Electronix Express	\$0.55 (1-9) or \$0.50 (10+)	Quantity needed 01; IEEE Kit

ECE211 - Electrical Engineering Lab I

Lab Location: Riggs 200A

Lab Equipments	Model/Part No.	Supplier	Cost per Unit	Comments
NI-ELVIS II with Protoboard	NI ELVIS II 780381-01	National Instruments	\$ 2,808.00	Latest version of ELVIS II
LabVIEW 2011 Student Edition	LabVIEW 2011 Student Edition - Download	OnTheHub e-store	\$20.00	
Computer workstation	Optiplex 760	Dell	~ \$750.00	
Resistance Substitution Box	Lutron RBOX-408	Electronix Express	\$90.00(1-9) or \$85(10+)	
Capacitance Substitution Box	Lutron CBOX-406	Electronix Express	\$115.00(1-9) or \$110.00(10+)	
Inductance Substitution Box	LS400A IET Labs	Electronix Express	\$695.00	
Discrete Resistors ^a	13015	Electronix Express	\$0.12 (10-199) or \$0.08 (200-999)	
Scope Probes	EZ-HOOK 05SP1020-48	Electronix Express	\$17.90(1-9) or \$17.25(10+)	
Banana to IC Hook Lead Set Probes	05ALS5	Electronix Express	\$3.50(1-9) or \$2.95(10+)	

^a 100Ω, 220Ω, 250Ω, 330Ω, 510Ω, 680 Ω, 1.0K Ω, 1.5KΩ, 2.0KΩ, 3.0KΩ, 3.9KΩ, 5.1KΩ

NOTE: Lab manual recommends using capacitor substitution boxes and inductor substitution boxes for following capacitors and inductors respectively. Capacitor substitution box can be replaced with following discrete capacitors.

Discrete Capacitors	Model/Part No.	Supplier	Cost per Unit
0.01μF	14MR100.01U	Electronix Express	\$0.11(1-9) or \$0.09 (10-99)
0.047μF	14MR100.047U	Electronix Express	\$0.12(1-9) or \$0.09 (10-99)
0.1μF	14MR100.1U	Electronix Express	\$0.15(1-9) or \$0.11 (10-99)

Since discrete inductors are not available in the values used in the lab manual, therefore few changes can be made in the lab manual to accommodate the discrete inductors. For example, 220mH, 470mH, 570mH (series combination of 100mH & 470mH) and 790mH (series combination of 100mH, 220mH & 470mH) can be used in place of 200mH, 400mH, 600mH and 800mH respectively.

Discrete Inductors	Model/Part No.	Supplier	Cost per Unit
100mH	150100M	Electronix Express	\$1.05(1-9) or \$0.95 (10+)
220mH	150220M	Electronix Express	\$1.65(1-9) or \$1.45 (10+)
470mH	150470M	Electronix Express	\$3.40(1-9) or \$3.10 (10-99)

ECE212 - Electrical Engineering Lab II

Lab Location: Riggs 200C

Lab Equipments	Model/Part No.	Supplier	Cost per Unit	Comments
NI-ELVIS II with Protoboard	NI ELVIS II 780381-01	National Instruments	\$ 2,808.00	Latest version of ELVIS II
LabVIEW 2011 Student Edition	LabVIEW 2011 Student Edition - Download	OnTheHub e-store	\$20.00	
Computer workstation	Optiplex 760	Dell	~ \$750.00	
Resistance Substitution Box	Lutron RBOX-408	Electronix Express	\$90.00(1-9) or \$85(10+)	
Capacitance Substitution Box	Lutron CBOX-406	Electronix Express	\$115.00(1-9) or \$110.00(10+)	
Inductance Substitution Box	LS400A IET Labs	Electronix Express	\$695.00	
Discrete Resistors ^a	13015	Electronix Express	\$0.12 (10-199) or \$0.08 (200-999)	
Transformer input 120Vac-60Hz, center tapped 12.6Vac	16P112-1	Electronix Express	\$6.50(1-9) or \$5.95(10+)	
Scope Probes	EZ-HOOK 05SP1020-48	Electronix Express	\$17.90(1-9) or \$17.25(10+)	
Banana to IC Hook Lead Set Probes	05ALS5	Electronix Express	\$3.50(1-9) or \$2.95(10+)	

^a10 Ω , 22 Ω , 100 Ω , 330 Ω , 2.2K Ω , 5K Ω , 10K Ω

NOTE: Lab manual gives a choice between using substitution box or discrete components for following capacitors and inductors.

Discrete Capacitors	Model/Part No.	Supplier	Cost per Unit
0.005 μ F	CD135	West Florida Components	\$0.15(1-20) or \$0.13 (21-100)
0.010 μ F	14MR100.01U	Electronix Express	\$0.11(1-9) or \$0.09 (10-99)

Since 50mH inductor used in the lab 04 is not available as a discrete component, therefore 56mH inductor can be accommodated in the lab manual for the experiment.

Discrete Inductors	Model/Part No.	Supplier	Cost per Unit
56mH	15056M	Electronix Express	\$0.95(1-9) or \$0.85 (10+)
100mH	150100M	Electronix Express	\$1.05(1-9) or \$0.95 (10+)

Also, Lab 09 uses a two port network which can be build using discrete components of choice.

ECE311 - Electrical Engineering Lab III

Lab Location: Riggs 200C

Lab Equipments	Model/Part No.	Supplier	Cost per Unit	Comments
NI-ELVIS II with Protoboard	NI ELVIS II 780381-01	National Instruments	\$ 2,808.00	Latest version of ELVIS II
LabVIEW 2011 Student Edition	LabVIEW 2011 Student Edition - Download	OnTheHub e-store	\$20.00	
Computer workstation	Optiplex 760	Dell	~ \$750.00	
B2 SPICE Student Version	B2 Spice A/D v4 Standard	Beige Bag Software	\$60.00	
Hameg Curve Tracer	HM6042	Hameg	NA	Discontinued
Resistance Substitution Box	Lutron RBOX-408	Electronix Express	\$90.00(1-9) or \$85(10+)	
Diode	1N4004	Electronix Express	\$0.12(1-9) or \$0.09(10-99)	Quantity needed 04; IEEE Kit
Zener Diode	11-1N4744	Electronix Express	\$0.20(1-9) or \$0.15(10-99)	Quantity needed 01; IEEE Kit
Bipolar Junction Transistors (BJTs)	2N3904	Electronix Express	\$0.12(1-9) or \$0.10(10-99)	Quantity needed 04; IEEE Kit
Field Effect Transistors (FETs)	2N4416	Electronix Express	\$3.10(1-9) or \$2.20(10-99)	Quantity needed 01; IEEE Kit
n-channel MOSFET	ZVN4424A	Mouser Electronics	\$1.12(1-9) or \$0.99(10-99)	Quantity needed 02
p-channel MOSFET	ZVP4424A	Mouser Electronics	\$1.16(1-9) or \$1.02(10-99)	Quantity needed 02
Discrete Resistors ^a	13015	Electronix Express	\$0.12 (10-199) or \$0.08 (200-999)	IEEE Kit
Discrete Capacitor 10 μ F	14ER05010U	Electronix Express	\$0.15 (10-199) or \$0.10 (200-999)	Quantity needed 01; IEEE Kit
Discrete Capacitor 22 μ F	14ER05022U	Electronix Express	\$0.16 (10-199) or \$0.11 (200-999)	Quantity needed 01; IEEE Kit

Discrete Capacitor 47 μ F	14ER03547U	Electronix Express	\$0.16 (10-199) or \$0.12 (200-999)	Quantity needed 03; IEEE Kit
Scope Probes	EZ-HOOK 05SP1020-48	Electronix Express	\$17.90(1-9) or \$17.25(10+)	
Banana to IC Hook Lead Set Probes	05ALS5	Electronix Express	\$3.50(1-9) or \$2.95(10+)	

^a100 Ω , 470 Ω , 1K Ω , 3.9K Ω , 4.7K Ω , 10K Ω , 15K Ω , 68K Ω , 100K Ω

Note: NI-ELVIS II's 2-wire/3-wire functions can be used in place of Hameg curve tracer. Subsequent instructions will be needed to add in the current lab manual.

ECE312 - Electrical Engineering Lab IV

Lab Location: Riggs 200B

Lab Equipments	Model/Part No.	Supplier	Cost per Unit	Comments
NI-ELVIS II with Protoboard	NI ELVIS II 780381-01	National Instruments	\$ 2,808.00	Latest version of ELVIS II
LabVIEW 2011 Student Edition	LabVIEW 2011 Student Edition - Download	OnTheHub e-store	\$20.00	
Computer workstation	Optiplex 760	Dell	~ \$750.00	
B2 SPICE Student Version	B2 Spice A/D v4 Standard	Beige Bag Software	\$60.00	
CA3046 Transistor Array	10-3046	Electronix Express	\$0.65	Quantity needed 01; IEEE Kit
LM 747 Dual OP-AMP	10747	Electronix Express	\$1.60	Quantity needed 01; IEEE Kit
Resistance Substitution Box	Lutron RBOX-408	Electronix Express	\$90.00(1-9) or \$85(10+)	
Discrete Capacitor 2200 μ F		Electronix Express	\$0.16 (10-199) or \$0.11 (200-999)	Quantity needed 03; IEEE Kit
Scope Probes	EZ-HOOK 05SP1020-48	Electronix Express	\$17.90(1-9) or \$17.25(10+)	
Banana to IC Hook Lead Set Probes	05ALS5	Electronix Express	\$3.50(1-9) or \$2.95(10+)	

^a300 Ω , 1K Ω , 2.7K Ω , 3.9K Ω , 18K Ω , and as required

ECE372 – Microcomputer Interfacing Lab

Lab Location: Riggs 322

Lab Equipments	Model/Part No.	Supplier	Cost per Unit	Comments
NI-ELVIS II with Protoboard	NI ELVIS II 780381-01	National Instruments	\$ 2,808.00	Latest version of ELVIS II
LabVIEW 2011 Student Edition	LabVIEW 2011 Student Edition - Download	OnTheHub e-store	\$20.00	
Freescale NI ELVIS Microcontroller Prototype Board	779378-01	National Instruments	\$309.00	
Computer workstation	Optiplex 760	Dell	~ \$750.00	
CodeWarrior IDE Development Suite – Special Edition	Special Edition: CodeWarrior for HCS12(X) Microcontrollers (Classic)	Freescale	\$0.00	
74LS374 Flip-Flop	10 74LS374	Electronix Express	\$0.75(1-9) or \$0.65(10+)	IEEE Kit
Quad 2-input NAND gate	10 74LS00	Electronix Express	\$0.40(1-9) or \$0.35(10+)	IEEE Kit
Digital to Analog Converter DAC 7512	DAC7512NCT-ND	Digi-Key	\$4.67(1-9) or \$4.18 (10-24)	
SPDT Switch	17L8601	Electronix Express	\$2.25(1-9) or \$1.95(10+)	
Rotary Pulse Generator (Grayhill 61C11-01-08-02)	70217116	Allied Electronics	\$20.660 (1-14) or \$18.980 (15-24)	
DC Motor	ST130-12240-38	Jameco Electronics	\$1.25(1-9) or \$1.09 (10+)	
Current Driver Chip (MC1413BPG)	45J1095	Newark Electronics	\$0.41(1-24) or \$0.38 (25-99)	Replacement of TD62003
4 x 4 matrix Keypad	17KP1604	Electronix Express	\$6.25(1-9) or \$5.75(10+)	
Discrete Resistors 8.2K Ω	13015	Electronix Express	\$0.12 (10-199) or \$0.08 (200-999)	Quantity required 02;