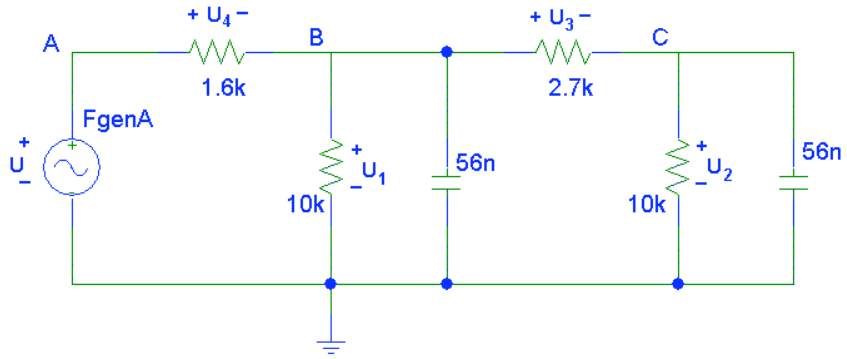
SHORT INSTRUCTION MANUAL FOR GUEST EXPERIMENTS

1 Kirchhoff's voltage law

The circuit in the Figure is used to check Kirchhoff's voltage law. Wire the circuit and set the function generator to 5 Vpp and 1000 Hz. If you are unable to read the color code or numerical value of a component the nominal value will be displayed to the lower right of the breadboard when you point at the component.



Measure the voltages U_1, U_2 and U_3 with a multi-meter and fill in the table.

U_1	U_2	U_3	$U_1 - U_3 - U_2$

Calculate $U_1 - U_3 - U_2$ and fill in the value in the table above.
The result is not zero, but according to KVL it should be zero or …

The reason for the non zero result is that the multi-meter does not take into consideration the relative phase between the various voltages, but instead only shows the effective AC values.

Exchange the DMM for the oscilloscope and measure U, U_1 and U_2. Use the phase of U as a reference phase and fill in the complex values for the various voltages in the table.

	U	U_1	U_2
Amplitude (Vrms)			
Phase °			

Draw a scale diagram showing the voltages U, U_1 and U_2.

Highlight and measure the voltages U_3 and U_4 in the diagram.
Also measure the voltages U_3 and U_4 with a multi-meter. Fill in the table.

Measured in diagram		Measured with multi-meter	
U_3	U_4	U_3	U_4

2 Operational amplifier

The data sheet for the uA741 operational amplifier can be downloaded from http://www.datasheetcatalog.org/datasheet/texasinstruments/ua741.pdf. You can, for example, wire the following circuit and measure the slew rate with the oscilloscope or exchange R1 for the DMM and measure the short-circuit output current with the DMM.