**Key Terms and Definitions**

***Conductance***

The inverse of resistance. A unit of electrical conductivity as opposed to resistivity. Units: Siemens (S).

***Galvanic Skin Response***

The physiological response of the sympathetic nervous system that causes changes in skin conductance by stimulating the secretion of sweat into the skin.

***Voltage Divider***

A resistor network where two resistors are placed in series so that the input voltage is split between the two resistors.

***Cut-off frequency***

The frequency at which a filter begins to attenuate signals. Typically defined as the frequency at which the output of the filter is 70.7% of the input signal.

***Attenuation***

A decrease in signal amplitude.

***Gain***

An increase in signal amplitude.

***High-pass Filter***

A type of filter that causes signals with a higher frequency than the specified cut-off frequency to pass with minimal to no attenuation or change in amplitude, but that attenuates signals with frequencies lower than the cut-off frequency.

***Low-pass Filter***

A type of filter that causes signals with a lower frequency than the specified cut-off frequency to pass with minimal to no attenuation or change in amplitude, but that attenuates signals with frequencies higher than the cut-off frequency.

***Band-pass Filter***

A type of filter than causes signals lower than a given frequency and higher than a given frequency to become attenuated while only passing signals within a given “band” of frequencies. A bandpass filter is a simple combination of a low and a high-pass filter.

***Passband***

The passband refers to the range of frequencies that are not attenuated by a given filter

***Stopband***

The stop band refers to the range of frequencies that are completely attenuated by a given filter.

***Transition band***

The transition band refers to the range of frequencies that are between the passband and the stopband.

***Single Supply***

A type of powering scheme that uses a single positive voltage compared to a reference point (ground) compared to using a positive and a negative voltage compared to a reference point. Think of this like a battery. Using a single battery, one, without any modification at least, has access to a reference point, the minus terminal of the battery, and the positive side of the battery. Single supply may also be referred to as “unipolar”.

***Operational Amplifier or Op Amp***

A type of circuit component that can perform mathematical operations on electrical signals such as multiplication, division, logarithm, etc.

***Common Mode Input Range***

The working range of input voltages for a given op amp.

***Opto-isolators (also called Optocouplers)***

Opto-isolators are small components that transfer electrical signals using light. Inside a typical opto-isolator is an LED and a phototransducer such as a phototransistor or photodiode. The LED causes induces current flow through the phototransducer, which when connected to a resistor, produces an output voltage proportional to the input light from the LED. Since the LED and phototransducer are connected via light and not a wire, a short circuit in one side of the circuit will not cause a dangerous surge in current in the other side of the circuit creating a form of electrical isolation.

***Coin Cell Battery***

A type of battery in the shape of a coin which ranges in sizes from a bit smaller than a US penny to about as large as a US quarter. A common type of coin cell battery is the CR2032 which has a diameter of about 20mm and a nominal voltage of 3V. Coin cell batteries are intended for circuits that use very small amounts of current, typically smaller than 1mA, and they have a very limited current output capability, typically less than 20mA, due to their high internal series resistance.