Part I [60 points]: Design, conduct and analyze results of experiments to do the following:

1. Measure the linear range limitations of an Op Amp
2. Measure the offset voltage of an Op Amp
3. Measure the input bias current of an Op Amp
4. Measure the Gain-Bandwidth product (GBW) of an Op Amp

Part II [40 points]: Design and verify an Op Amp based circuit that can be used to emulate a Biopotential source of the following specifications:

- Waveform: sinusoidal
- Amplitude: 500 μV peak-to-peak
- Frequency: 100 Hz
- Source impedance: 1 MΩ
- Signal configuration: differential

General Requirements

1. Experimental procedure including detailed steps for all parts including the analysis of the results must be approved by instructor before conducting experiments.
2. You are free to select any components you prefer for your experiments.
3. You should be prepared to demonstrate your experimental setup and answer questions in all aspects related to your experiment.
4. You should work in groups of 3-4 students each. One report should be submitted on behalf of the whole group.
5. You may use any resources you find useful to your experiment as long as you acknowledge such use in your report in accordance to ethical guidelines.

- *Assigned*: February 19, 2015
- *Deadline*: TBD
- *Submission*: Electronic form (PDF) to instructor's email address: `ykadah@kau.edu.sa`