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6.101: Project Abstract  
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### **Simple Heart Beat Monitor for Analog Enthusiasts**

An electrocardiogram (ECG or EKG) is a simple, non-invasive way of measuring the heart's electrical conduction system by picking up electrical pulses generated by the polarization and depolarization of cardiac tissue and translating it into a waveform.

Although the field of electrocardiography is already well established, we propose a simple and cheap method of visually and audibly displaying the frequency of a heart beat, which can be used as a learning tool in biomedical courses. In order to do so, we intend to use a circuit design developed earlier on in the 6.101 course to translate a heart beat into an optical signal, transmit the heart beat along an optical fiber cable, detect and convert the heart beat into an electrical signal, amplify the heart beat signal, measure the pulse rate, and display the pulse rate using an analog meter and a loudspeaker. The analog meter will visually indicate the pulse rate on a graded scale, while the loudspeaker will audibly indicate pulse rate by producing a tone whose frequency is proportional to the frequency of the heartbeat.