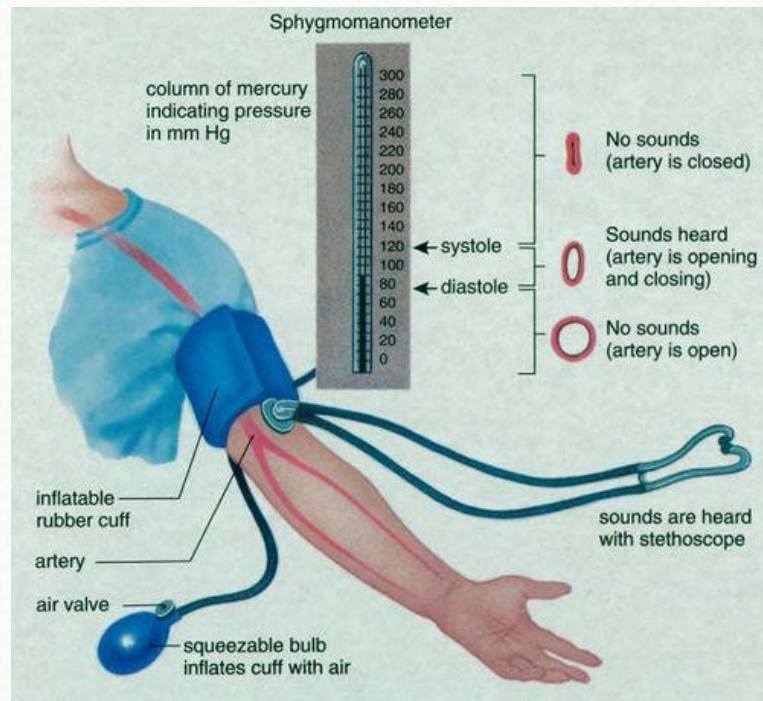# GE - 109

Automatic Blood Pressure Monitor

Aim of the Experiment

To understand the working principles of an automatic blood pressure monitor and compare it vis-à-vis with the manual mercury sphygmomanometer.

Mercury Sphygmomanometer

The blood pressure measurement process with mercury sphygmomanometer:

- Inflate the cuff to well over plausible blood pressures (250mmHg or so).
- Slowly deflate the cuff while listening to the artery.
- When you start to hear sounds, that's when the systolic blood pressure is higher than the cuff pressure and the heart can squeeze a little blood through the cuff, which makes a little squirting noise.
- As cuff pressure continues to drop it stays between the systolic and diastolic blood pressures and therefore blood flow stops and starts and creates audible turbulence.
- When the artery stops making noise, the cuff pressure is below the diastolic blood pressure and the cuff has no effect on the artery, so it goes back to laminar flow that doesn't make noise.
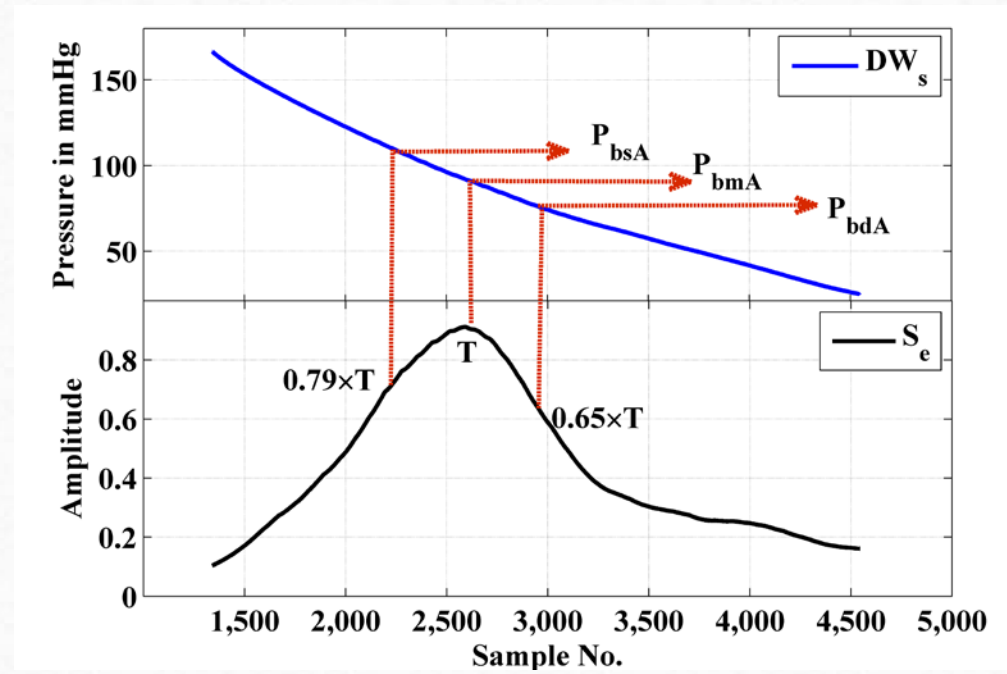
Automatic BP Monitor: Block Diagram
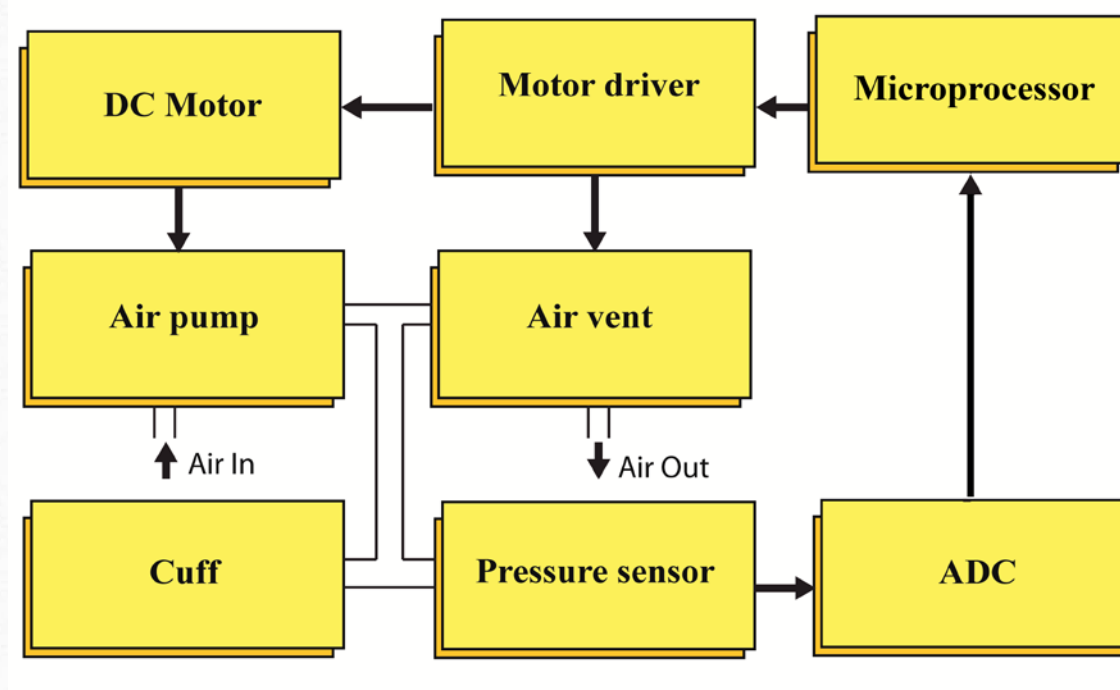
Signal obtained by the pressure sensor
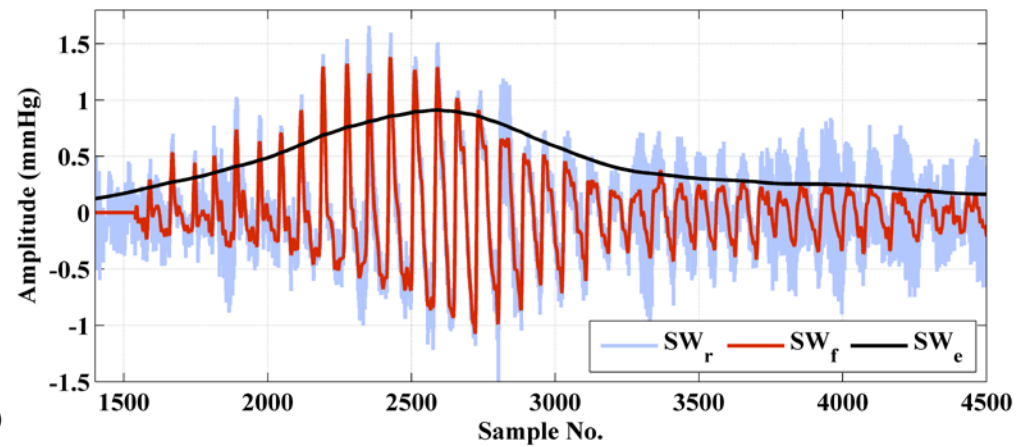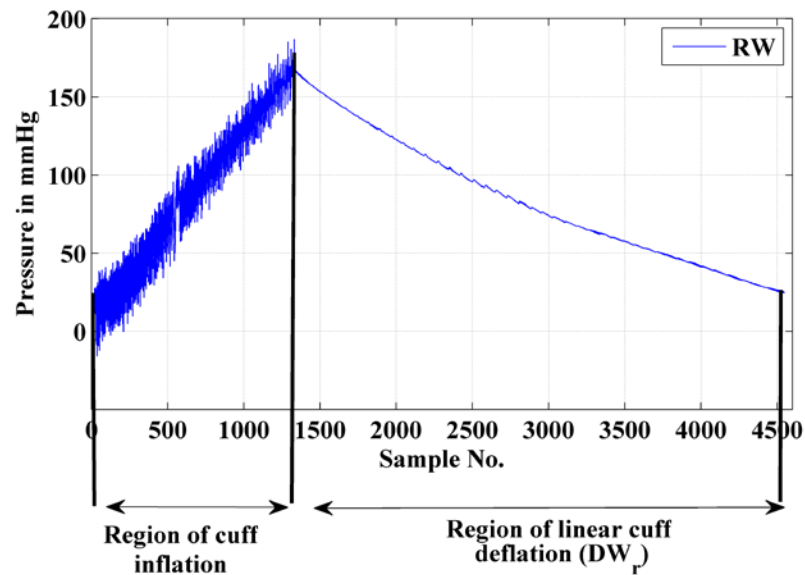
Pressure calculation

Class Task-1

1. Record blood pressure using both manual and automatic BP monitor for all your group mates.

2. Un-screw the Automatic BP monitor and try to identify the parts of it. Screw it back in place

3. Attach the automatic monitor to the mercury manometer through a three-way lure lock and identify the sequence of events that it carries out to perform the measurement. Note the maximum pressure that it builds before opening the valve.

Class Task-2

From the given inflation-deflation data of human subjects write a code to measure the blood pressure.