PHYS 500-FALL 2019
Homework 3
Hand in: Friday 8th November 2019 at 23:59
Prof. Vasileios Lempesis

1. In an experiment to study the behaviour of silicon diodes when they are cooled, the voltage across a diode was measured as a function of the diode temperature. We got the following data after 8 measurements.

Recordings	Temperature (K)	Voltage (V)
1	300	0.630
2	290	0.653
3	280	0.670
4	270	0.678
5	260	0.695
6	250	0.705
7	240	0.735
8	230	0.748

Apply the method of least squares to determine the best fit line $V=BT+A$. This is to determine A and B and their errors and rounding them in correct number of significant digits . V is for voltage and T for temperature. (15 marks)

3. We measure the sides of the slab, shown in figure below and we found:
$a=(9.0\pm0.3)mm$, $b=(3.0\pm0.3)mm$, $c=(2.0\pm0.3)mm$.

a) Calculate the volume of the slab (1 mark).

b) Calculate the error of the volume (2 marks).

c) Quote the final result (volume ± error) after making all the necessary roundings (2 marks).