Exercise 100A	Determination of Solid State Density

Instruction

I. Laboratory apparatus list

- Micrometer screw
- Calliper
- Lab Balances
- Measured elements

II. The purpose of the exercise

- Getting Acquainted with the basic engineering tools (including the measurements methods, measurement errors and instrument inaccuracies)
- Determination of the density of examined element
- Analysis of the obtained results and report writing training

III. Measurements instruction

A. Measure the volume of investigated element

- using micrometer and calipers to measure the diameter and height of sample. Measurements must be performed several times (according to the supervisor instruction) particularly when irregular elements are investigated;

B. Determine the mass of examined element

IV. Analysis of the results

- Calculate the average value of the measured element volume and the uncertainty of volume.
- Calculate the average value of the measured element weight and the uncertainty of the weight.
- Determine the density value (ρ) of measured element.

- Estimate the uncertainty of the density u (ρ)

V. The table example

Number	m [kg]	d [m]	h [m]	V [m^3]	ρ[kg/m^3]
1					
2					
3					
:					
n					
$\overline{X}$					
ΔX					
u(X)					
$u_c(X)$					