University POLITEHNICA of Bucharest Mechanics of Materials Laboratory	
Student _____ Faculty_____Year_____Group _____ Date_____	**COMPRESSION TESTING**
Aim of test: - To present the methodology for compression testing - To plot the stress – strain curve in compression for steel - To calculate the ultimate strength in compression for grey cast iron.	*The testing machine*
The specimen Height: L_0 = 20 mm Diameter: d_0 =20 mm Cross section area = _____ mm² *Measurement of shortening ΔL_i:* using two 0.01mm/div. dial gauges	*Hydraulic compression testing machine with a maximum load of 600 kN*
Formulae Based on the values (F_i, ΔL_i) obtained experimentally, one calculates: The normal stress $\sigma_i = \dfrac{F_i}{S_0}$ The normal strain $\varepsilon_i = \dfrac{\Delta L_i}{L_0} \cdot 100$ [%] F_i is the force for which the extensometer registers the shortening $\Delta L_i = L_i – L_0$	*a* *b* *Failure modes: a) steel, b) cast iron*

Results for the steel specimen

Compression force F [N]	Left dial gauge shortening ΔL_s [mm]	Right dial gauge shortening ΔL_d [mm]	Average shortening $\Delta L = \dfrac{\Delta L_s + \Delta L_r}{2}$ [mm]	Normal stress σ [MPa]	Normal strain ε [%]
0	0	0	0	0	0

The stress strain curve must be plotted and attached to this paper

Results for the cast iron specimen

  Failure force in compression: _____ N

  Ultimate strength in compression: _____ MPa

Observations

1. The steel specimen deforms elasto-plastically taking the shape of a barrel.

2. On the stress – strain curve, a proportionality limit of _____ MPa was noticed

3. The Young's modulus, obtained as the slope of the linear part of the stress – strain curve has a value of _____ MPa.

4. Cast iron exhibited a fragile failure, cracks at an angle of 45° with respect to the generatrix of the cylinder being noticed

5. _____